

# Albany-Dougherty

## Pre-Hazard Mitigation Plan 2015



*Mitigation Plans form the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. The planning process is as important as the plan itself. It creates a framework for risk-based decision making to reduce damages to lives, property, and the economy from future disasters. Hazard mitigation is sustained action taken to reduce or eliminate long-term risk to people and their property from hazards.*

Prepared with assistance of



Southwest Georgia  
Regional Commission

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## CHAPTER 1 – INTRODUCTION

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Summary of Changes: There were very few changes to Chapter One.

- The methodology changed somewhat because this is an update to a plan.

### I. PROBLEM STATEMENT, PURPOSE, AUTHORITY, AND NEED

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Dougherty County, Georgia is susceptible to natural and technological hazards that have the possibility of causing serious threat to the health and security of the county's citizens. The cost of response to and recovery from potential disasters can be lessened when attention is turned to mitigating impacts and effects before they happen. Each year weather-related disasters in the United States cause approximately 500 deaths and approximately \$14 billion in property damage.<sup>1</sup> As the nation's communities continue to expand, carrying with them physical development farther across the landscape, the number of people and developed properties in the path of natural hazards increases significantly. Consequently, the loss of life and property suffered by victims has increased with each disaster, and survivors of these calamities turn to government for redress, increasing the financial burden placed on the nation's taxpayers. In an effort to reduce such losses communities are being prompted to identify how, where and why they are susceptible to natural disasters, and take measures to mitigate, or reduce/eliminate exposure to them and the loss of life and property that so frequently occurs.

Preparation of this document is Dougherty County's response to the Disaster Mitigation Act of 2000, an amendment to the Robert T. Stafford Disaster Relief and Emergency Assistance Act. This law authorizes release of federal financial assistance to communities that have experienced a disaster of such severity as to receive a presidential declaration. Simply stated, the referenced amendment establishes an additional eligibility requirement; after November 1, 2004, to be eligible for federal financial disaster assistance a community must not only have been declared a disaster area by the president of the United States, but *must have prepared and adopted a federally approved pre-disaster mitigation plan.*

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<sup>1</sup> National Oceanic and Atmospheric Administration

This is not to suggest that mitigation is novel to the community. In recent years Dougherty County has been among the state's more aggressive communities in planning and implementing preparedness activities. The current effort expands upon those of previous years by placing an increased emphasis on reducing the losses which commonly occur as a result of disaster so the cost of response and recovery will also be less. The importance of such efforts was clearly manifested locally since implementing the first Local Pre-Hazard Mitigation Plan in 2005. Dougherty County and the City of Albany have had significant decreases in damages from natural hazards.

This plan is not intended as a comprehensive identification and assessment of all potential hazards; only those deemed most likely to occur. It is recognized the community could be assailed by a disaster not addressed herein. Neither does it address the local impacts which may result from a disaster occurring elsewhere, such as the burden placed on a community because of its location on a hurricane evacuation route.

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## II. METHODOLOGY, PARTICIPANTS, PROCESS

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In November 2014, the Southwest Georgia Regional Commission (SWGRC) began working with Dougherty County to update the Pre-Hazard Mitigation Plan. The commission staff formed a committee at the Pre-Hazard Mitigation Plan Kickoff Meeting on November 6th, 2014 consisting of EMA/EMS personnel, Administrators, and Board of Education members, local university representatives, Council on Aging, Health Department, Marine Corps Logistics Base, and many more. It was at this meeting that the newly formed committee decided that since this was an update to the plan, subcommittees would not be necessary because most of the data had already been assembled from the current plan and needed minor updating and tweaking to be usable. The committee that had worked on the previous plan was a diverse group consisting of members from most of the jurisdictions, so the product they had developed was a good base for this update. Dougherty County and Albany each participated in the previous Hazard Mitigation Plan and they continued to do so in this plan. Each section of the plan was scrutinized by the SWGRC and the executive committee to assess the current content and offer additions/alternatives based on the new requirements of FEMA and community goals. Other local documents were scrutinized to determine if any inconsistencies exist. These documents include Dougherty County's Comprehensive Plan (including Albany), Dougherty County's Emergency Operations Plan and the Southwest Georgia Regional Plan.

As is customary, the comprehensive plan addressed community facilities; most, if not all, of which were identified in this document as critical facilities. Some issues, such as flood plains, were addressed in the natural resources section but have since been updated by FEMA. The local comprehensive plan is scheduled for update by October 31st, 2016 and at the time of developing this plan the initial steps of the comprehensive plan will be occurring.

The Local Emergency Operations Plan (LEOP) was also reviewed and portions were used for preparation of this document. It was found, however, that the LEOP is less concerned about mitigation and more about response, which is the whole point of the plan so much of it although informative proved not very useful in the mitigation plan. A copy of the LEOP may be found in Appendix C.

Numerous other sources were used in the course of plan preparation, including the Georgia Department of Natural Resources, Georgia Forestry Commission, Georgia Tornado Database, National Climatic Data Center, National Weather Service, newspaper articles, and interviews with numerous local sources. The information gathered from these sources filled in the gaps and details that tables of data could not provide. By interviewing local sources about conditions during and after storms it provided us with an “eyes on the ground” perspective that may not have been gotten especially if the storm had only isolated pockets of severity. The 2011 Georgia Hazard Mitigation Strategy was also reviewed, and although informative, not enough information specific to Dougherty County could be gleaned for inclusion. A Flood Mitigation Plan and a Flood Insurance Study were studied and are included in the Albany Flood Hazard Mitigation Plan located in Appendix B. The information from the Flood Insurance Study and Flood Hazard Mitigation Plan was checked to make sure there was no conflicting information or action steps. The Community Wildfire Protection Plan (CWPP) was reviewed even though wildfires are not considered a priority and the plan was included in Appendix B.

In February 2015, a HMPC was convened consisting of various department heads and personnel representing Dougherty County and Albany. This group began examining the existing document and analyzing its contents. Each section of the plan was reviewed and analyzed to determine if the contents are still valid and whether the contents need to be updated. The Local Hazard, Risk, and Vulnerability section was scrutinized to determine

the top disasters that face Dougherty County and it was found that severe weather (thunderstorms) are still the biggest threat to Dougherty County. The prioritized list of hazards affecting Dougherty County and the City of Albany has not changed. The list is as follows:

- Severe Weather
- Drought
- TORNADOS
- Floods

Severe Weather is still the top hazard faced by Dougherty County and Albany. The committee decided to include drought as the second most detrimental hazard because its affects are broad in that it can affect the economy and contribute to wildfires.

TORNADOS and floods remained on the list because of their frequency and ability to inflict severe damages.

Man-made hazards were reviewed by the HMPC and, although still a threat, the situation relative to this threat in Dougherty County has not changed and being prepared for these hazards and how to react to these types of hazards is handled mainly within the Dougherty County Local Emergency Operations Plan.

The goals and objectives were reviewed by the HMPC to first determine whether the goals had changed and if so to what degree. The objectives and tasks were then reviewed based on the following basic criteria:

- Is the objective or task still in line with the goals?
- Are the objectives and tasks appropriate for accomplishing the goal?
- Are the tasks associated with each objective cost effective?
- Are there more efficient ways to accomplish the stated goal and objective?

The Plan Maintenance section was reviewed based on the following criteria:

- Are action steps being overlooked?
- Is measurable progress being made towards goals?
- Is the plan maintenance section cost effective?

There were no changes made to this section because it was determined that the criteria were being met.

After changes had been proposed, the SWGRC looked at the newest requirements for PHMP from FEMA and GEMA and how to reassemble the plan with proposed changes into an initial draft to be presented to GEMA for comments. At this time a public hearing was held to allow public comment.

Executive Committee – comprised of City and County Officials EMA/EMS personnel, Administrators, and Board of Education members, local university representatives, Council on Aging, Health Department, Marine Corps Logistics Base, and many more.

In general, the Executive Committee convened once every 60 days during their months of activity, although some activity extended beyond a month.

Jim Vaught – Dougherty County EMA Director

Sue Clifton – SWGA Public Health – District Ebola Planner

Cristina Sapp – SOWEGA Council on Aging – Gateway Counselor

Eugene Clark – Albany Amateur Radio - President

Wendy Mills - Dougherty County DFCS - Supervisor

Evelyn Woods – Dept Human Resources-facility and support – Emergency  
Management Coordinator

Jim Ewings – World Vision – Disaster Community Specialist

Angel White – GA EPD – Environmental Specialist

Patricia Chastain – Miller-Coors – Hazmat Coordinator

Luther Proctor – Dougherty County Environmental Health – Environmental Health  
Specialist

Cedric Hill – Albany State Univ. Police Dept. - Officer

Jarrett Frazier – Albany State Univ. Police Dept. - Officer

Marvin Thomas – MCLB Albany – Protection Officer

Steven Dancer – MCLB Albany – Disaster Coordinator

Mike Gonzalez – Dougherty County Search And Rescue Team - Logistics Chief

Kelly English – The Salvation Army - Major

Bill Berry – Albany-Dougherty Drug Unit - Commander

Michael Fowler – Dougherty County Coroner - Coroner

Steve O’Neil – Southwest Georgia Regional Commission

The Southwest Georgia Regional Commission assisted the committees with data collection, research and analysis, facilitated all committee meetings and public hearings, compiled an extensive cartographic digital database, including GPS collection of critical facilities, and compiled the final written document.

Letters, emails and phone calls were used to contact each jurisdiction and invite them to participate in the Hazard Mitigation Planning process and at the very least send a representative to be a part of the committee. An invitation by email to neighboring EMA directors was also sent out and can viewed in Appendix E. Neighboring counties were invited to provide input at public hearings and before the plan was submitted to GEMA. A copy of the “Invitation to Review” letter is located in Appendix E. Neighboring counties were also briefed on the Dougherty PHMP at the December 2014 Emergency Management Agency of Georgia (EMAG) meeting that hosted numerous EMA personnel from surrounding counties. Because of their responsibility for promoting the general public welfare and providing emergency response services, there was a very strong local government interest and involvement in plan development from both Dougherty County and the City of Albany.

Two publicly advertised meetings will be held during plan development. The first hearing was held during the plan development phase on March 27<sup>th</sup> 2015 at the Albany-Dougherty Government Complex to inform the general public of the effort and to invite comment and participation. There were no attendees. The second hearing was held December 17<sup>th</sup> 2015 also at the Albany-Dougherty Government Complex and there were no attendees.



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### III. ORGANIZATION

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A detailed analysis of each of five natural hazards is presented in Chapter 2. The analyses consist of a description of the hazard and the damage potential, historical frequency and probability of future occurrence, an inventory of assets exposed to the hazard and an estimate of the loss which the community could reasonably be expected to incur, land use patterns as they relate to each hazard, and any aspects of hazards which may be unique to any of the jurisdictions. Presented in Chapter 3 is an itemized list of goals, objectives, tasks and action steps which are proposed for implementation to mitigate likely adverse impacts of specific hazard events. This part of the plan also identifies, prioritizes, and suggests funding sources for hazard mitigation activities. Chapter 4 describes how the plan will be implemented and maintained. Chapter 5 consists of a concluding statement, followed by appendices.

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### IV. HAZARD RISK VULNERABILITY (HRV) SUMMARY

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This plan identifies and assesses community risks to certain natural hazards and identifies how to reduce exposure to them. The assessment provides the factual basis for activities proposed to reduce losses, including a description of the type, location, and extent of natural hazards deemed most likely to befall Dougherty County. Reference was made to the historical record to compile information on previous events and for use in estimating the probability of hazard recurrence.

Vulnerability includes a summary of past events and their impacts. This is quantified by describing the types and numbers of existing and future buildings, infrastructure, and critical facilities located in identified hazard prone/susceptible areas. Estimates of the potential dollar losses that could reasonably be expected to result from another specified hazard event are also presented.

Land uses and development trends were reviewed for the purpose of identifying mitigation options that can be considered in future land use decisions to reduce each jurisdiction's specific risk.

Based on these assessments a blueprint for reducing potential losses was developed, incorporating expansion and improvement on existing authorities, policies, programs and resources. The blueprint includes goals and objectives to reduce or avoid long-term vulnerabilities to hazards. The end product is a prioritized action plan with specific steps to achieve stated goals. This, in turn, is supplemented with a maintenance process to monitor, evaluate, and update the mitigation plan within a five-year timeframe. The following hazards are addressed in this:

- Severe Weather (Thunderstorm Winds)
- Drought
- Tornados
- Floods

Each hazard is identified in Chapters 2 and 3. The impact and past occurrences of each hazard are discussed as well how each jurisdiction is affected. Included are particular vulnerabilities in Dougherty County and an estimate of potential losses due to damage from each hazard.

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## V. LOCAL MITIGATION GOALS AND OBJECTIVES

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This plan will serve as guidance for Dougherty County and the City of Albany in coordinating and implementing hazard mitigation policies, programs, and projects. This plan will be periodically updated and revised in order to facilitate and direct the ongoing implementation of hazard mitigation activities. Through the preparation of this plan and the implementation of the associated Action Plan, the community plans to achieve the following goals:

- GOAL #1      Ensure the public health and safety of the citizens of Dougherty County and Albany
- GOAL #2      To facilitate responsible development in Dougherty County and incorporated areas so as to reduce or eliminate the potential impacts of disasters

- GOAL #3 To enhance public awareness and understanding of disaster preparedness
- GOAL #4 To extend and increase public awareness of flood insurance as a mitigative measure
- GOAL #5 To enhance post-disaster response and recovery activities

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## VI. MULTI-JURISDICTIONAL CONSIDERATIONS

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This document has been developed for unincorporated Dougherty County and the City of Albany. The plan includes an identification and analysis of a comprehensive range of specific mitigation actions needed to reduce the adverse effects of specific hazards in each jurisdiction. With few exceptions, each jurisdiction is susceptible to the same natural hazards. However, where applicable some specific mitigation actions have been identified for each jurisdiction.

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## VII. ADOPTION, IMPLEMENTATION, MONITORING AND EVALUATION

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The Dougherty County Pre-Disaster Mitigation Plan was formally adopted by the Dougherty County Board of Commissioners and the City Council of Albany after receiving notification from the Georgia Emergency Management Agency that the plan complied with applicable federal regulations.

Presented in Chapter 6 is a description of plan implementation, monitoring, evaluation, and update activities, public participation, and the process of incorporating mitigation into other planning and administrative functions of each local government. This section details the process that will ensure the Dougherty County Pre-Disaster Mitigation Plan becomes an integral part of local governance and life in the community.

| <u>Milestone</u>                          | <u>Number of Days to Complete</u> |
|---|-----------------------------------|
| Initial Planning Meeting for stakeholders | 1 day                             |

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|  |                  |
|--|------------------|
| Identify repetitive loss structures                              | 30 days          |
| Establish a property flood mitigation priority program           | 30 days          |
| Identify project structures                                      | 30 days          |
| Determine mitigation measures for each repetitive loss structure | 30 days          |
| Complete Draft Mitigation Plan                                   | 30 days          |
| Public Hearing for Review and Comments                           | 30 days          |
| Present Final Mitigation Plan for Approval                       | 15 days          |
| Submit Plan to GEMA for Review                                   | 30 days          |
| Submit Plan to FEMA for Review                                   | 30 days          |
| Formal Approval and Adoption of Plan                             | 15 days          |
| Implement Changes from FEMA and GEMA Review                      | 15 days          |
| Implementation of Plan   | Ongoing          |
| Evaluation of Plan   | March - Annually |
| Update of Plan (Informal – not submitted to GEMA)                | May - Annually   |
| Update of Plan (Formal – submitted to GEMA)                      | May – 2020       |

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## CHAPTER 2 - NATURAL HAZARD, RISK AND VULNERABILITY (HRV) SUMMARY

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### Summary of changes:

- The Enhanced Fujita scale has been added to replace its predecessor
- All Hazard event tables have been updated to account for storms in the years since creation of the plan.
- Values for critical facilities have been updated.
- GMIS report data has been updated/included in the appendix
- New disasters have been added

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### I. NATURAL HAZARD – SEVERE WEATHER (THUNDERSTORM WINDS)

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#### **A. Hazard Identification**

Thunderstorm winds are generally short in duration involving straight-line winds (as opposed to a rotating column of air) and/or gusts in excess of 50 mph. This hazard tends to affect areas of softwood trees, a feature common in the community, areas with exposed improvements and infrastructure, and above ground utilities. These winds can cause power outages, transportation and economic disruptions, significant property damage and pose a high risk of injuries and loss of life.

#### **B. Hazard Profile**

All areas of the county have experienced damage from thunderstorm winds. Although there have not been any such hazards of “disaster” proportions, it is the most common natural hazard to befall the community. Dougherty County lies entirely in the 90-99 mph wind zone. Examples of local damages include forests, trees blown onto homes, commercial establishments and power lines, moving semi-trailer trucks blown off the highway, roofs torn off buildings and signs blown off businesses. The historic record as compiled by the National Climatic Data Center documents 96 thunderstorm events over the past 64 years. The data cannot be broken down by jurisdiction because the initial data was classified by County only. No deaths and only 2 injuries

were documented and property damage reportedly totaled \$1.47 million. Extrapolating from the past half century of available data, the community has a 150% probability of experiencing thunderstorm winds any given year (Appendix A- Hazard Frequencies Table, Page 28).

*National Climatic Data Center*

### **C. Community Exposure**

The random, sudden and violent natures of thunderstorms place all residents and all physical development throughout the community at risk. The critical facilities identified in Dougherty County and Albany are schools, governmental facilities, fire and emergency medical facilities, water and wastewater treatment facilities and solid waste sites. The Dougherty County Pre-Disaster Planning Team used GIS, E-911 information, related websites, GEMA's online database, and other modeling tools to map the county's critical facilities and determine which are most likely to be affected by thunderstorms. This, of course, includes all the community's critical infrastructure, identified in Appendix A. According to the critical facilities inventory report (Thunderstorm) and Worksheet #3A, the most damage in terms of dollars would be in the residential sector. There is a potential of \$3.3 billion in damage to structures and \$535.5 million in damage to critical facilities in Albany and \$41.7 million in Dougherty County . The data for worksheet 3A was from the tax digest and has been broken down by jurisdiction. For more specifics on this data please see in Appendix D - for Worksheet #3A Inventory of Assets – Thunderstorms. The Critical Facilities Inventory is in Appendix A (Page 13-16).

| Location                      | County/Zone   | St | Date       | Time  | T.Z. | Type              | Mag     | Dth | Inj | PrD    | CrD   |
|-------------------------------|---------------|----|------------|-------|------|-------------------|---------|-----|-----|--------|-------|
| <b>Totals:</b>                |               |    |            |       |      |                   |         | 0   | 2   | 1.470M | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 08/03/1961 | 15:49 | CST  | Thunderstorm Wind | 63 kts. | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 06/09/1966 | 15:00 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 08/11/1968 | 11:27 | CST  | Thunderstorm Wind | 52 kts. | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 08/25/1968 | 15:14 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 02/15/1969 | 09:30 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 06/20/1969 | 19:00 | CST  | Thunderstorm Wind | 50 kts. | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 07/08/1969 | 14:45 | CST  | Thunderstorm Wind | 58 kts. | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 01/15/1971 | 11:40 | CST  | Thunderstorm Wind | 51 kts. | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 04/30/1971 | 05:27 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 02/16/1974 | 01:30 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 06/10/1976 | 16:38 | CST  | Thunderstorm Wind | 50 kts. | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 07/04/1976 | 14:00 | CST  | Thunderstorm Wind | 50 kts. | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 08/30/1976 | 18:04 | CST  | Thunderstorm Wind | 55 kts. | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 02/24/1977 | 01:35 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 03/21/1977 | 21:55 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 06/12/1977 | 19:10 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 07/02/1977 | 10:25 | CST  | Thunderstorm Wind | 50 kts. | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 01/25/1978 | 17:00 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 01/25/1978 | 17:00 | CST  | Thunderstorm Wind | 52 kts. | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 05/23/1979 | 13:40 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 02/10/1981 | 19:22 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 02/10/1981 | 19:35 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 05/16/1983 | 06:15 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 05/16/1983 | 06:30 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 05/16/1983 | 06:30 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 04/05/1985 | 21:50 | CST  | Thunderstorm Wind | 0 kts.  | 0   | 0   | 0.00K  | 0.00K |

|                               |               |    |            |       |     |                   |         |   |   |       |       |
|-------------------------------|---------------|----|------------|-------|-----|-------------------|---------|---|---|-------|-------|
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 06/09/1985 | 15:30 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 11/21/1985 | 22:00 | CST | Thunderstorm Wind | 56 kts. | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 07/20/1986 | 15:49 | CST | Thunderstorm Wind | 57 kts. | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 11/20/1986 | 13:00 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 07/28/1987 | 15:00 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 06/27/1988 | 14:25 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 05/01/1989 | 11:00 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 06/08/1989 | 17:58 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 06/14/1989 | 15:30 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 07/13/1989 | 12:30 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 08/25/1989 | 17:34 | CST | Thunderstorm Wind | 55 kts. | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 02/10/1990 | 06:55 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 02/10/1990 | 07:00 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 02/16/1990 | 12:15 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 02/16/1990 | 12:37 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 07/08/1990 | 18:30 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 08/30/1990 | 12:30 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 09/10/1990 | 13:35 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 09/10/1990 | 14:20 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 01/30/1991 | 10:59 | CST | Thunderstorm Wind | 52 kts. | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 01/30/1991 | 11:15 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 06/04/1991 | 17:00 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 07/10/1991 | 18:15 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 07/24/1991 | 19:00 | CST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 01/13/1992 | 05:00 | PST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA | 06/15/1992 | 15:25 | PST | Thunderstorm Wind | 0 kts.  | 0 | 0 | 0.00K | 0.00K |



|                                   |               |    |            |       |     |                   |            |   |   |         |       |
|-----------------------------------|---------------|----|------------|-------|-----|-------------------|------------|---|---|---------|-------|
| <a href="#">DOUGHERTY CO.</a>     | DOUGHERTY CO. | GA | 06/30/1992 | 11:06 | PST | Thunderstorm Wind | 55 kts.    | 0 | 0 | 0.00K   | 0.00K |
| <a href="#">Dougherty</a>         | DOUGHERTY CO. | GA | 03/31/1993 | 15:30 | EST | Thunderstorm Wind | 0 kts.     | 0 | 0 | 0.00K   | 0.00K |
| <a href="#">Albany</a>            | DOUGHERTY CO. | GA | 05/31/1993 | 15:20 | EST | Thunderstorm Wind | 0 kts.     | 0 | 0 | 5.00K   | 0.00K |
| <a href="#">Albany</a>            | DOUGHERTY CO. | GA | 06/26/1994 | 12:15 | EST | Thunderstorm Wind | 0 kts.     | 0 | 0 | 0.50K   | 0.00K |
| <a href="#">Albany</a>            | DOUGHERTY CO. | GA | 07/22/1994 | 18:30 | EST | Thunderstorm Wind | 0 kts.     | 0 | 0 | 0.50K   | 0.00K |
| <a href="#">Albany</a>            | DOUGHERTY CO. | GA | 05/19/1995 | 12:45 | EST | Thunderstorm Wind | 0 kts.     | 0 | 0 | 600.00K | 0.00K |
| <a href="#">Albany</a>            | DOUGHERTY CO. | GA | 07/16/1995 | 20:55 | EST | Thunderstorm Wind | 0 kts.     | 0 | 0 | 15.00K  | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 06/19/1998 | 16:10 | EST | Thunderstorm Wind |            | 0 | 0 | 50.00K  | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 05/13/1999 | 19:45 | EST | Thunderstorm Wind |            | 0 | 0 | 5.00K   | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 08/13/1999 | 14:28 | EST | Thunderstorm Wind |            | 0 | 0 | 2.00K   | 0.00K |
| <a href="#">NORTHEAST PORTION</a> | DOUGHERTY CO. | GA | 08/14/1999 | 14:15 | EST | Thunderstorm Wind |            | 0 | 0 | 10.00K  | 0.00K |
| <a href="#">PECAN CITY</a>        | DOUGHERTY CO. | GA | 09/07/1999 | 13:40 | EST | Thunderstorm Wind |            | 0 | 0 | 2.00K   | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 02/14/2000 | 00:25 | EST | Thunderstorm Wind |            | 0 | 0 | 15.00K  | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 07/11/2000 | 14:30 | EST | Thunderstorm Wind |            | 0 | 1 | 10.00K  | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 07/22/2000 | 16:40 | EST | Thunderstorm Wind |            | 0 | 0 | 2.00K   | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 07/23/2000 | 15:30 | EST | Thunderstorm Wind |            | 0 | 0 | 1.00K   | 0.00K |
| <a href="#">PUTNEY</a>            | DOUGHERTY CO. | GA | 03/15/2001 | 05:20 | EST | Thunderstorm Wind | 50 kts. E  | 0 | 0 | 0.00K   | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 05/31/2002 | 13:35 | EST | Thunderstorm Wind |            | 0 | 0 | 20.00K  | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 08/01/2002 | 15:30 | EST | Thunderstorm Wind |            | 0 | 0 | 2.00K   | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 12/24/2002 | 09:05 | EST | Thunderstorm Wind | 55 kts. EG | 0 | 1 | 250.00K | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 02/22/2003 | 08:45 | EST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K   | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 07/29/2003 | 14:12 | EST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K   | 0.00K |
| <a href="#">COUNTYWIDE</a>        | DOUGHERTY CO. | GA | 06/27/2004 | 18:30 | EST | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 5.00K   | 0.00K |
| <a href="#">ALBANY</a>            | DOUGHERTY CO. | GA | 07/15/2004 | 15:40 | EST | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 1.00K   | 0.00K |
| <a href="#">EAST ALBANY</a>       | DOUGHERTY CO. | GA | 07/15/2004 | 15:45 | EST | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 5.00K   | 0.00K |
| <a href="#">RADIUM SPGS</a>       | DOUGHERTY CO. | GA | 07/15/2004 | 15:50 | EST | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 5.00K   | 0.00K |

|   |               |    |            |       |       |                   |            |   |   |        |       |
|---|---------------|----|------------|-------|-------|-------------------|------------|---|---|--------|-------|
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 04/19/2006 | 17:45 | EST   | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">COUNTYWIDE</a>                        | DOUGHERTY CO. | GA | 05/10/2006 | 18:10 | EST   | Thunderstorm Wind | 60 kts. EG | 0 | 0 | 75.00K | 0.00K |
| <a href="#">COUNTYWIDE</a>                        | DOUGHERTY CO. | GA | 05/10/2006 | 18:28 | EST   | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 0.50K  | 0.00K |
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 06/25/2006 | 19:15 | EST   | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 10.00K | 0.00K |
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 04/14/2007 | 21:00 | EST-5 | Thunderstorm Wind | 60 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">DOUGHERTY CO ARPT</a>                 | DOUGHERTY CO. | GA | 06/09/2007 | 17:36 | EST-5 | Thunderstorm Wind | 52 kts. MG | 0 | 0 | 0.00K  | 0.00K |
| <a href="#">(ABY)SW GEORGIA REGIONAL AIRPO...</a> | DOUGHERTY CO. | GA | 06/09/2008 | 19:07 | EST-5 | Thunderstorm Wind | 67 kts. MG | 0 | 0 | 0.00K  | 0.00K |
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 06/09/2008 | 19:08 | EST-5 | Thunderstorm Wind | 65 kts. EG | 0 | 0 | 50.00K | 0.00K |
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 01/07/2009 | 04:15 | EST-5 | Thunderstorm Wind | 54 kts. MG | 0 | 0 | 0.00K  | 0.00K |
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 02/28/2009 | 14:20 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 5.00K  | 0.00K |
| <a href="#">ACREE</a>                             | DOUGHERTY CO. | GA | 06/28/2009 | 13:44 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.00K  | 0.00K |
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 06/28/2009 | 15:22 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.50K  | 0.00K |
| <a href="#">(ABY)SOUTHWEST GA RGNL ARPT</a>       | DOUGHERTY CO. | GA | 06/15/2010 | 19:05 | EST-5 | Thunderstorm Wind | 64 kts. MG | 0 | 0 | 45.00K | 0.00K |
| <a href="#">EAST ALBANY</a>                       | DOUGHERTY CO. | GA | 03/09/2011 | 13:30 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 5.00K  | 0.00K |
| <a href="#">PRETORIA</a>                          | DOUGHERTY CO. | GA | 03/09/2011 | 13:30 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.50K  | 0.00K |
| <a href="#">(ABY)SOUTHWEST GA RGNL ARPT</a>       | DOUGHERTY CO. | GA | 04/05/2011 | 01:04 | EST-5 | Thunderstorm Wind | 55 kts. MG | 0 | 0 | 0.00K  | 0.00K |
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 04/05/2011 | 01:10 | EST-5 | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 20.00K | 0.00K |
| <a href="#">WALKER</a>                            | DOUGHERTY CO. | GA | 09/05/2011 | 15:24 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 3.00K  | 0.00K |
| <a href="#">LOCKETT CROSSING</a>                  | DOUGHERTY CO. | GA | 09/05/2011 | 15:30 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">LOCKETT CROSSING</a>                  | DOUGHERTY CO. | GA | 09/05/2011 | 15:30 | EST-5 | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 50.00K | 0.00K |
| <a href="#">LOCKETT CROSSING</a>                  | DOUGHERTY CO. | GA | 09/05/2011 | 15:30 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">LOCKETT CROSSING</a>                  | DOUGHERTY CO. | GA | 01/21/2012 | 18:40 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 15.00K | 0.00K |
| <a href="#">(ABY)SOUTHWEST GA RGNL ARPT</a>       | DOUGHERTY CO. | GA | 02/18/2012 | 21:18 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 30.00K | 0.00K |
| <a href="#">(ABY)SOUTHWEST GA RGNL ARPT</a>       | DOUGHERTY CO. | GA | 02/18/2012 | 21:20 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 02/18/2012 | 21:25 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 50.00K | 0.00K |
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 05/06/2012 | 14:30 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">ALBANY</a>                            | DOUGHERTY CO. | GA | 05/06/2012 | 14:30 | EST-5 | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 8.00K  | 0.00K |

|   |               |    |            |       |       |                   |            |   |   |        |       |
|---|---------------|----|------------|-------|-------|-------------------|------------|---|---|--------|-------|
| <a href="#">PECAN CITY</a>                  | DOUGHERTY CO. | GA | 06/14/2012 | 13:00 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">ALBANY</a>                      | DOUGHERTY CO. | GA | 07/01/2012 | 21:40 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 5.00K  | 0.00K |
| <a href="#">(ABY)SOUTHWEST GA RGNL ARPT</a> | DOUGHERTY CO. | GA | 07/26/2012 | 12:14 | EST-5 | Thunderstorm Wind | 50 kts. MG | 0 | 0 | 0.00K  | 0.00K |
| <a href="#">(ABY)SOUTHWEST GA RGNL ARPT</a> | DOUGHERTY CO. | GA | 08/09/2012 | 13:47 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">ALBANY</a>                      | DOUGHERTY CO. | GA | 08/09/2012 | 13:50 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">ALBANY</a>                      | DOUGHERTY CO. | GA | 08/09/2012 | 13:50 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 7.00K  | 0.00K |
| <a href="#">PRETORIA</a>                    | DOUGHERTY CO. | GA | 09/03/2012 | 16:30 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">ALBANY</a>                      | DOUGHERTY CO. | GA | 01/30/2013 | 18:15 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K  | 0.00K |
| <a href="#">PUTNEY</a>                      | DOUGHERTY CO. | GA | 01/30/2013 | 18:22 | EST-5 | Thunderstorm Wind | 55 kts. EG | 0 | 0 | 3.00K  | 0.00K |
| <a href="#">PUTNEY</a>                      | DOUGHERTY CO. | GA | 06/27/2013 | 22:30 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.00K  | 0.00K |
| <a href="#">PUTNEY</a>                      | DOUGHERTY CO. | GA | 06/27/2013 | 22:31 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K  | 0.00K |
| <a href="#">ALBANY</a>                      | DOUGHERTY CO. | GA | 06/06/2014 | 20:30 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">ALBANY</a>                      | DOUGHERTY CO. | GA | 06/16/2014 | 16:45 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 50.00K | 0.00K |
| <a href="#">RADIUM SPRINGS</a>              | DOUGHERTY CO. | GA | 06/20/2014 | 14:07 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">PUTNEY</a>                      | DOUGHERTY CO. | GA | 06/20/2014 | 14:12 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">ALBANY</a>                      | DOUGHERTY CO. | GA | 08/19/2014 | 14:10 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 2.00K  | 0.00K |
| <a href="#">TURNER CITY</a>                 | DOUGHERTY CO. | GA | 09/19/2014 | 14:35 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.50K  | 0.00K |
| <a href="#">TURNER CITY</a>                 | DOUGHERTY CO. | GA | 09/19/2014 | 15:00 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 1.00K  | 0.00K |
| <a href="#">TURNER CITY</a>                 | DOUGHERTY CO. | GA | 09/19/2014 | 15:02 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 3.00K  | 0.00K |
| <a href="#">EAST ALBANY</a>                 | DOUGHERTY CO. | GA | 09/19/2014 | 15:02 | EST-5 | Thunderstorm Wind | 50 kts. EG | 0 | 0 | 0.50K  | 0.00K |
| <b>Totals:</b>                              |               |    |            |       |       |                   |            | 0 | 2 | 1.470M | 0.00K |

The critical facilities identified in Dougherty County and Albany are schools, governmental facilities, fire and emergency medical facilities, and water system. While there was no damage to critical facilities from the thunderstorms winds listed in the data above electricity to those facilities can be severely affected for long periods of time in thunderstorm events due to wind damage and/or lightning. This creates a need for electricity to be restored quickly either through repairing the power lines or obtaining fuel powered generators. This, of course, includes all the community's critical infrastructure, identified in Appendix A.

#### **D. Estimate of Potential Losses**

Two formats prescribed by the Georgia Emergency Management Agency were used in estimating potential losses: the Georgia Mitigation Information

System (GMIS) and the Assets Worksheet. Data input for the Critical Facilities Inventory included the replacement value of each critical facility identified. This information can be viewed in Appendix A (Critical Facilities – Wind Hazard Pg 13-16). According to the critical facilities inventory the replacement value totals \$577.2 million and there was no total for functional use value.

Dougherty County and Albany are susceptible to wind speeds ranging from 90 mph to 99 mph.

#### **E. Land Use and Development Trends**

Because of the random nature of thunderstorms the entire community is at risk. Consequently, there are not any local land use or development trends applicable to the thunderstorm hazard. Building codes are enforced in Dougherty County and Albany. Wind speed threshold for new construction in Dougherty County and Albany is 99 mph. The Wind Hazard Scores are based on the 2000 International Building Code, figure 1609 contours showing 3 second gust wind speeds with a 50 year return interval. The Northwest portion of the state scored an additional point for the 250 mph community tornado shelter design zone according to FEMA publications.

There are no new or planned structures/buildings/infrastructure that would be considered critical or non-critical facilities planned for Albany or Dougherty County that would be subject to other requirements above and beyond that of the adopted building codes.

#### **F. Multi-Jurisdictional Differences**

The Dougherty County Pre Disaster Mitigation Plan assessed each community to determine if there was a variation in risk from thunderstorms. From the assessment it was determined there is no variation in risk of a thunderstorm event in any jurisdiction, or at any location that differs from the risk facing the entire community. The City of Albany may not receive as much damage as Dougherty County but because the development is more concentrated there is more of a probability for flying debris to cause more damage. The county is subject to building codes that requires structures to withstand the 99 mph wind speed threshold which is indicated on the critical facilities map. The critical facilities map of each jurisdiction as it related to

thunderstorm winds is located in Appendix A (Dougherty County Critical Facilities Map Images – Thunderstorm, Page 26-27).

**G. Hazard, Risk and Vulnerability Summary**

Thunderstorm winds are the community's most common natural hazard event, and have demonstrated the ability to strike anywhere at any time. The current state of technology cannot prevent such hazards from occurring. The community must prepare in advance, and be able to respond quickly and intelligently to such an event.

No changes have occurred in Dougherty County with regards to development, population, infrastructure, etc. that would increase or decrease the community's vulnerability to thunderstorm winds since the previous plan was approved.

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## II. NATURAL HAZARD – DROUGHT

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### A. Hazard Identification

A drought is a prolonged period without rain which progresses in stages. The first stage, meteorological drought, occurs when precipitation falls below normal levels and is usually expressed as a rainfall deficit, e.g., inches below normal. Stage two, agricultural drought, occurs when the amount of moisture in the soil no longer meets the needs of a particular crop. When meteorological drought occurs at a critical time of year it can result in water deficient topsoil, which may hinder germination and reduce crop yield. This type drought is usually measured in soil moisture levels and can be devastating to agricultural communities. (The accompanying table indicates the frequency of stage two conditions in the community over the past two and one-half decades.)

Hydrological drought is the third stage. This occurs when surface and subsurface (ground) water supplies fall below normal levels due to prolonged meteorological drought. Indicators include decreased stream flow rates, lake elevations and groundwater levels. Hydrological drought can be detrimental to the environment, upsetting the hydrologic cycle and impacting fish, wildlife and plant species. If this persists long enough, demand for water may exceed supply, leading to the fourth stage – socio-economic drought. This stage (considered extreme for Dougherty County) can take many months, or even years to develop, often with devastating social and economic consequences. Future severity can also be determined by the Palmer Drought Severity Index (PDSI). The Palmer Index is most effective in determining long term drought—a matter of several months—and is not as good with short-term forecasts (a matter of weeks). It uses a 0 as normal, and drought is shown in terms of minus numbers; for example, minus 2 is moderate drought, minus 3 is severe drought, and minus 4 is extreme drought. According to the Palmer index for Dougherty County, times of severe drought reach -3 to -5.5 on the chart and these numbers can be used to estimate the extent or potential strength for droughts in store for Dougherty County in the future. The Palmer Index is a measurement of dryness based on recent precipitation and temperature and is the unofficial measure of drought conditions. The Palmer Drought Index is based on a supply-and-demand model of soil moisture. Supply is comparatively straightforward to calculate, but demand is more complicated as it depends

on many factors - not just temperature and the amount of moisture in the soil but hard-to-calibrate factors including evapotranspiration and recharge rates.

## B. Hazard Profile

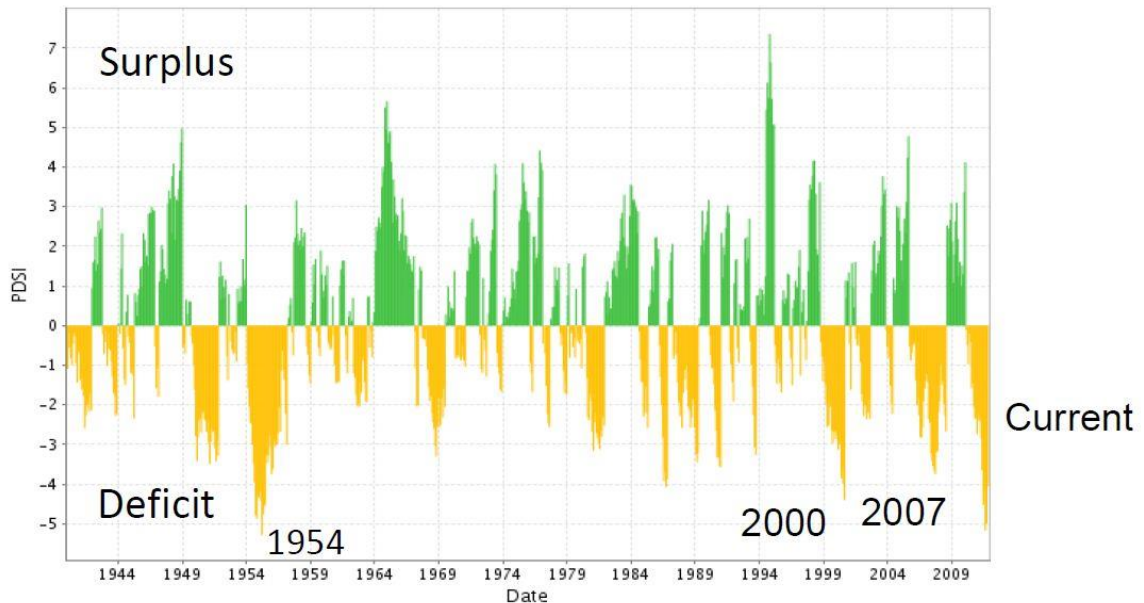
Drought is a widespread weather pattern affecting a much larger area than any single community. Hence, drought affects the entire community, primarily economically because critical facilities are not directly susceptible to adverse impacts of such an event. Generally, the population is not at risk from physical harm, except in the latter stages of a severe drought. In the drought of 2010-2013, private wells began to run dry in the county. In addition during drought, Dougherty County is susceptible to local wildfires which tax the local fire departments. Over the past twenty years the historical record documented three drought events of varying length. No deaths or injuries were recorded. A few of these events from 2010 to 2011 were likely one extended drought period and because of this it is not possible to make any accurate statistical predictions regarding drought frequency or extent. Other such events are known to have occurred earlier, but supporting documentation could not be located. Based on straight-line extrapolation from the documented record of Local Agricultural Drought Declarations (see Section A), the community has a 4.69% chance of experiencing a drought in any given year (Appendix A – Hazard Frequencies Table, Page 28).

| County/Zone      | St. | Date                   | Time | T.Z.  | Type    | Mag | Dth | Inj | PrD   | CrD   |
|------------------|-----|------------------------|------|-------|---------|-----|-----|-----|-------|-------|
| DOUGHERTY (ZONE) | GA  | 9/1/1997               | 0:00 | EST   | Drought |     | 0   | 0   | 0.00K | 0.00K |
| DOUGHERTY (ZONE) | GA  | 11/23/2010 TO 2/1/2011 | 0:00 | EST-5 | Drought |     | 0   | 0   | 0.00K | 0.00K |
| DOUGHERTY (ZONE) | GA  | 5/10/2011 TO 2/1/2013  | 0:00 | EST-5 | Drought |     | 0   | 0   | 0.00K | 0.00K |

*Source: National Climatic Data Center*

# Drought History

## Southwestern Georgia Drought Severity



*Data from: NCDC, Georgia region 7*

### C. Community Exposure

The nature of drought is such that the entire community is affected, primarily economically. Generally, neither the population nor critical facilities are at risk of physical harm, except in the latter stages of a severe drought. South Georgia has been under drought conditions since October, 2010. It is widely understood that droughts are cyclical and the drought conditions will undoubtedly return and Dougherty County and its municipalities are taking the threat seriously and being proactive in preparing for the next drought cycle. According to the critical facilities inventory report and Worksheet #3A, the most damage in terms of dollars would be in the residential sector. There is a potential of \$3.3 billion in damage to structures and \$535.5 million in damage to critical facilities in Albany and \$41.7 million in Dougherty County. The data for worksheet 3A was from the tax digest and has been broken down by jurisdiction. For more specifics on this data please see in Appendix D - for Worksheet #3A Inventory of Assets – Drought. The Critical Facilities data is in Appendix A (Critical Facilities Inventory –Drought, Page 18-21)



**D. Estimate of Potential Loss**

Two formats prescribed by the Georgia Emergency Management Agency were used in estimating potential losses: the Georgia Mitigation Information System (GMIS) and the Assets Worksheet. Generally, neither the population nor critical facilities are at risk of physical harm, except in the latter stages of a severe drought, which the community was exposed to in 2010-2012. These deep wells are generally not affected until the late or “critical” stages of drought. Agriculture crops are most directly affected by drought, and their loss can impose a severe economic burden on the local economy. Crop loss data was sought but found not to be reliable. Within the community it is common knowledge that the past two decades of drought conditions have contributed to a significant reduction in the number of local farmers. This information can be reviewed in detail in Worksheet #3A – Drought, Appendix D.

**E. Land Use and Development Trends**

In Dougherty County, the agriculture sector is most at risk to drought, and the community relies heavily on the agricultural economy. Over 40% of the land area is classified as prime farmland; compared to 21% of the state land area.

There are no new or planned structures/buildings/infrastructure that would be considered critical or non-critical facilities planned for Albany or Dougherty County that would be subject to other requirements above and beyond that of the adopted building codes.

**F. Multi-Jurisdictional Differences**

While the physical impact of drought related losses occurs in the unincorporated area of the community, the resulting economic impact is felt community-wide. Because of the relative size of agriculture in the local economy, whatever affects production has a direct and immediate effect on the community. A map of each jurisdiction as it related to drought is located in Appendix A (Dougherty County Critical Facilities Map Images – Drought, Page 22-23).

**G. Hazard, Risk and Vulnerability Summary**

Drought does not have the sudden, violent impact on a community characteristic of a storm. A significant reduction from normal rainfall levels will first be felt by the agricultural community, and because agriculture comprises such a large share of the local economy, whatever affects production has a direct and immediate effect on the well-being of the community. Because conventional agriculture is so dependent on water, the community's front-line of defense against drought rests on the farmer. Yet, the producer's percentage return on economic investment is among the lowest of any economic sector, increasing the difficulty of maintaining a strong front-line defense. The community should identify additional ways to reduce economic dependence on agriculture.

No changes have occurred in Dougherty County with regards to development, population, infrastructure, etc. that would increase or decrease the community's vulnerability to drought since the previous plan was approved.







### III. NATURAL HAZARD – TORNADO

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#### **A. Hazard Identification**

A tornado is a violently rotating column of air extending from a thunderstorm to the ground, usually spawned when the weather is warm, humid and unsettled; conditions common to the local area. Severe weather conditions, such as a thunderstorm or hurricane, can produce a tornado. Tremendous destruction can occur with the combined action of strong winds (some at speeds in excess of 250 mph) and the impact of wind-borne debris. Damage paths can be in excess of one mile wide and fifty miles long. Although the path may be erratic, storm movement is usually from southwest to northeast. Tornadoes most often occur between 3 and 8 p.m., but may occur at any time of day or night. The official tornado season lasts from March-August with a peak in March-May, but they can occur anywhere, any time of year. Advance planning and quick response are keys to surviving a tornado. Information gleaned from the National Climatic Data Center, The Tornado Project and local newspapers revealed the following history of tornadic activity in the community.

## Enhanced Fujita (EF) Scale Rating System for Tornado Strength

| Scale | Wind speed |         | Relative frequency | Potential damage   |   |
|-------|------------|---------|--------------------|--|---|
|       | mph        | km/h    |                    |  |   |
| EF0   | 65–85      | 105–137 | 53.5%              | <p>Light damage.</p> <p>Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.</p> <p>Confirmed tornadoes with no reported damage (i.e. those that remain in open fields) are always rated EF0.</p>              |    |
| EF1   | 86–110     | 138–178 | 31.6%              | <p>Moderate damage.</p> <p>Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.</p>  |    |
| EF2   | 111–135    | 179–218 | 10.7%              | <p>Considerable damage.</p> <p>Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.</p>  |    |
| EF3   | 136–165    | 219–266 | 3.4%               | <p>Severe damage.</p> <p>Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.</p>  |  |
| EF4   | 166–200    | 267–322 | 0.7%               | <p>Devastating damage.</p> <p>Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.</p>   |  |
| EF5   | >200       | >322    | <0.1%              | <p>Explosive damage.</p> <p>Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (300 ft); steel reinforced concrete structure badly damaged; high-rise buildings have significant structural deformation.</p> |  |

**Figure 1.** In the USA and some other countries, on February 1, 2007, the Fujita scale was decommissioned in favor of what these scientists believe is a more accurate Enhanced Fujita Scale, which replaces it. The EF Scale is thought to improve on the F-scale on many counts—it accounts for different degrees of damage that occur with different types of structures, both man-made and natural. The expanded and refined damage indicators and degrees of damage standardize what was somewhat ambiguous. It also is thought to provide a much better estimate for wind speeds, and sets no upper limit on the wind speeds for the strongest level, EF5. *Source: NOAA's National Weather Service, Storm Prediction Center*

## B. Hazard Profile

All geographical areas of the county are susceptible to the randomness of tornadic activity. Although there have not been any such hazards of disaster proportions to befall the community for well over a half century, small storms have nevertheless been present, and climatic conditions were conducive for others to occur as has been evidenced by the issuance of tornado warnings and watches. Dougherty County typically see's damage from tornados ranging from simple wind damage, to roof damage and large trees uprooted these are reflected in the magnitude of events to hit Dougherty County which ranges from F0 to F2 on the older Fujita Scale (EF0 to EF2 on the Enhanced Fajita Scale). Based solely on the historic trend analysis (Appendix A – Hazard Frequencies Table, Page 28) of available data, the community has a 26.56% chance of experiencing a tornado event any given year. The information was not broken down by jurisdiction because accurate data does not exist that would permit that to happen. Information gleaned from the National Climatic Data Center revealed the following history of tornadic activity in the community.

| Location                      | County/Zone   | St. | Date       | Time  | I.Z.  | Type    | Mag | Dth | Ini | PrO     | CrO   |
|-------------------------------|---------------|-----|------------|-------|-------|---------|-----|-----|-----|---------|-------|
| <b>Totals:</b>                |               |     |            |       |       |         |     | 0   | 40  | 11.768M | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 11/16/1951 | 06:55 | CST   | Tornado | F1  | 0   | 0   | 2.50K   | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 01/28/1952 | 06:00 | CST   | Tornado | F1  | 0   | 1   | 25.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 07/24/1954 | 20:00 | CST   | Tornado | F0  | 0   | 0   | 2.50K   | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 08/22/1955 | 14:00 | CST   | Tornado | F0  | 0   | 0   | 0.25K   | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 04/03/1961 | 18:20 | CST   | Tornado | F2  | 0   | 1   | 25.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 08/09/1965 | 15:30 | CST   | Tornado | F2  | 0   | 0   | 25.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 02/13/1966 | 02:00 | CST   | Tornado | F1  | 0   | 1   | 25.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 04/26/1973 | 14:00 | CST   | Tornado | F1  | 0   | 0   | 25.00K  | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 05/01/1989 | 11:05 | EST   | Tornado | F1  | 0   | 1   | 250.00K | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 08/19/1992 | 13:48 | EST   | Tornado | F0  | 0   | 0   | 2.50K   | 0.00K |
| <a href="#">DOUGHERTY CO.</a> | DOUGHERTY CO. | GA  | 11/12/1992 | 16:30 | EST   | Tornado | F1  | 0   | 0   | 250.00K | 0.00K |
| <a href="#">Albany</a>        | DOUGHERTY CO. | GA  | 06/16/1994 | 17:28 | EST   | Tornado | F0  | 0   | 0   | 0.50K   | 0.00K |
| <a href="#">Albany</a>        | DOUGHERTY CO. | GA  | 11/07/1995 | 13:59 | EST   | Tornado | F2  | 0   | 36  | 10.000M | 0.00K |
| <a href="#">ALBANY</a>        | DOUGHERTY CO. | GA  | 10/26/1997 | 12:45 | EST   | Tornado | F0  | 0   | 0   | 10.00K  | 0.00K |
| <a href="#">ALBANY</a>        | DOUGHERTY CO. | GA  | 12/16/2000 | 16:50 | EST   | Tornado | F2  | 0   | 0   | 750.00K | 0.00K |
| <a href="#">WILLIAMSBURG</a>  | DOUGHERTY CO. | GA  | 09/16/2004 | 06:30 | EST   | Tornado | F0  | 0   | 0   | 75.00K  | 0.00K |
| <a href="#">PUTNEY</a>        | DOUGHERTY CO. | GA  | 03/02/2007 | 00:08 | EST-5 | Tornado | EF2 | 0   | 0   | 300.00K | 0.00K |
| <b>Totals:</b>                |               |     |            |       |       |         |     | 0   | 40  | 11.768M | 0.00K |

Source: National Climatic Data Center

\* Specific injury data not available

Dougherty County has had 17 tornado events in the last 64 years that have caused injuries and property loss. The tornadoes have ranged in magnitude from F0 (EF0) to F2 (EF2) and have caused upwards of \$11.7 million in property damage and caused 40 injuries. There have not been any occurrences of tornados since the previous plan update was completed.

### **C. Community Exposure**

The random, sudden and violent natures of the tornado place all residents and all physical development throughout the community at risk. The critical facilities identified in Dougherty County and its cities are schools, governmental facilities, fire and emergency medical facilities, water and wastewater treatment facilities and solid waste sites. The Dougherty County Pre-Disaster Planning Team used GIS, E-911 information, related websites, GEMA's online database, and other modeling tools to map the county's critical facilities and determine which are most likely to be affected by tornadoes. This, of course, includes all the community's critical infrastructure, identified in Appendix A. According to the critical facilities inventory report and Worksheet #3A, the most damage in terms of dollars would be in the residential sector. There is a potential of \$3.3 billion in damage to structures and \$535.5 million in damage to critical facilities in Albany and \$41.7 million in Dougherty County . The data for worksheet 3A was from the tax digest and has been broken down by jurisdiction. For more specifics on this data please see in Appendix D - for Worksheet #3A Inventory of Assets – Tornado. The Critical Facilities Inventory is in Appendix A (Page 13-16).

### **D. Estimate of Potential Losses**

Two formats prescribed by the Georgia Emergency Management Agency were used in estimating potential losses: the Georgia Mitigation Information System (GMIS) and the Assets Worksheet. Data input for the Critical Facilities Inventory included the replacement value of each critical facility identified. The value of the critical facilities in Dougherty County is \$577.2 million. All of the facilities are subject to damage from tornadoes. This information can be reviewed in detail in Worksheet #3A - Tornado, Appendix D. Population data is presented in Appendix B.

Dougherty County and its municipalities are susceptible to wind speeds ranging from 90 mph to 99 mph.

**E. Land Use and Development Trends**

Because of the random nature of tornadoes the entire community is at risk. Consequently, there are not any local land use or development trends applicable to the tornado hazard. Building codes are enforced in Dougherty County and the city of Albany. Wind speed threshold for new construction throughout the county is 99 mph. The rural/agricultural nature of Dougherty County suggests that if a tornado touched down in the county that the losses would likely be minimal compared to if a tornado touched down in the City of Albany the losses would be very drastic.

There are no new or planned structures/buildings/infrastructure that would be considered critical or non-critical facilities planned for Albany or Dougherty County that would be subject to other requirements above and beyond that of the adopted building codes.

**F. Multi-Jurisdictional Differences**

The Dougherty County Pre Disaster Mitigation Plan assessed each community to determine if there was a variation in risk from tornadoes. From the assessment it was determined there is no variation in risk of a tornado event in any jurisdiction, or at any location that differs from the risk facing the entire community. Tornadoes are statistically more likely to hit the unincorporated Dougherty County because it occupies proportionally more land area than the City of Albany within. Pre-disaster mitigation measures relevant to tornadoes are applicable throughout Dougherty County. A map of each jurisdiction as it relates to tornadoes is located in Appendix A (Dougherty County Critical Facilities Map Images – Tornado, Page 26-27).

**G. Hazard, Risk and Vulnerability Summary**

Tornadoes can strike anywhere in the community, at any time of day and any time of year, with suddenness and with great intensity as a result of weather

conditions common to the area. The current state of technology cannot prevent such hazards from occurring. Development regulations can be modified to protect structures from these events, and reduce the loss of property and life. Education and public awareness is another important step in preventing loss from tornadoes and high winds. The community must prepare in advance, and be able to respond quickly and appropriately to such an event.

No changes have occurred Dougherty County with regards to development, population, infrastructure, etc. that would increase or decrease the community's vulnerability to tornadoes since the previous plan was approved.



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## IV. NATURAL HAZARD – FLOOD

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### A. Hazard Identification

The overflow of rivers and streams onto normally dry lands due to severe storms or torrential rains is often a secondary impact of tropical storms or hurricanes. Among the most common factors affecting the extent of flooding are: topography, ground saturation, rainfall intensity and duration, soil type, drainage, drainage patterns, basin size, vegetative cover and development density/impervious surfaces. Flooding may occur slowly as the result of an extended rain or storm event, or as the result of a flash flood sometimes causing dam failure.

### B. Hazard Profile

Throughout history, people have settled next to waterways because of the advantages in transportation, commerce, and water supply. Floods have caused a greater loss of life and property, and have disrupted more families and communities in the United States, than all other natural hazards combined. Dougherty County contains five principle bodies of water: the Flint River, Kinchafoonee Creek, Kiokee Creek, Muckalee Creek and Lake Chehaw. The worst hazard events experienced in Dougherty County were incidences of flooding.

In a county of approximately 330 square miles, almost 27% is designated floodway or flood plain by FEMA's Flood Insurance Rate Map, effective September 25, 2009. The Flint River Basin, the Kinchafoonee and Muckalee Creek drainages have become more responsive and have a slightly increased risk potential of minor flooding. Major flood-prone areas are found along the Flint River which flows west across the northern portion of the county, then south through the city of Albany to the Mitchell County line. Property along Kinchafoonee and Muckalee Creeks and on the shores of Lake Worth is also vulnerable. Areas in and near the river corridor are affected by over-bank flow, while discharges from sinkholes fed by high river levels affect some neighborhoods before the river overflows its banks. Localized drainage problems away from the river may cause flooding at times of heavy rainfall. Relatively flat topography necessitates the installation of drainage canals, retention and detention ponds, and stormwater discharge systems

throughout the city and county. Upgrades to this system are undertaken on a regular basis as funding is made available.

Western Dougherty County contains large areas of designated flood plains. However, these areas are sparsely populated and represent limited damage vulnerability. Much of the property is in large agricultural and timber holdings, some publicly owned and protected from development.

Since 1994 Dougherty County, survived three major (94/98/09) and one minor (2000) floodings, suffering six dead and six injured. Loss of property and crops surpassed \$666M. Since the last plan update was completed Albany and Dougherty County have had 3 flood events and two flash flood events all with little to no damage to property. Appendix D Worksheet # 2 addresses hazard events since 1950. There is a 27.35% chance of Dougherty County experiencing flood level conditions during any given year (see Appendix A, Albany Dougherty Hazard Frequency Table).

Using detailed analysis and modeling, FEMA determines the base flood elevation (BFE), which is the predicted flood water elevation above mean sea level. Habitable areas of any new construction must begin above this level. For instance, a property in a B zone with a BFE of 2 feet would need the first habitable floor to be raised 2 feet or more and the floor under can only be used for things such as parking and/or storage/access. The last flood map update for the county was August 2009 and for the city it was also August 2009. Both Albany and Dougherty County participate in the National Flood Insurance Program and will continue to comply by enforcing the floodplain ordinance and beginning the process of establishing a Base Flood Elevation.

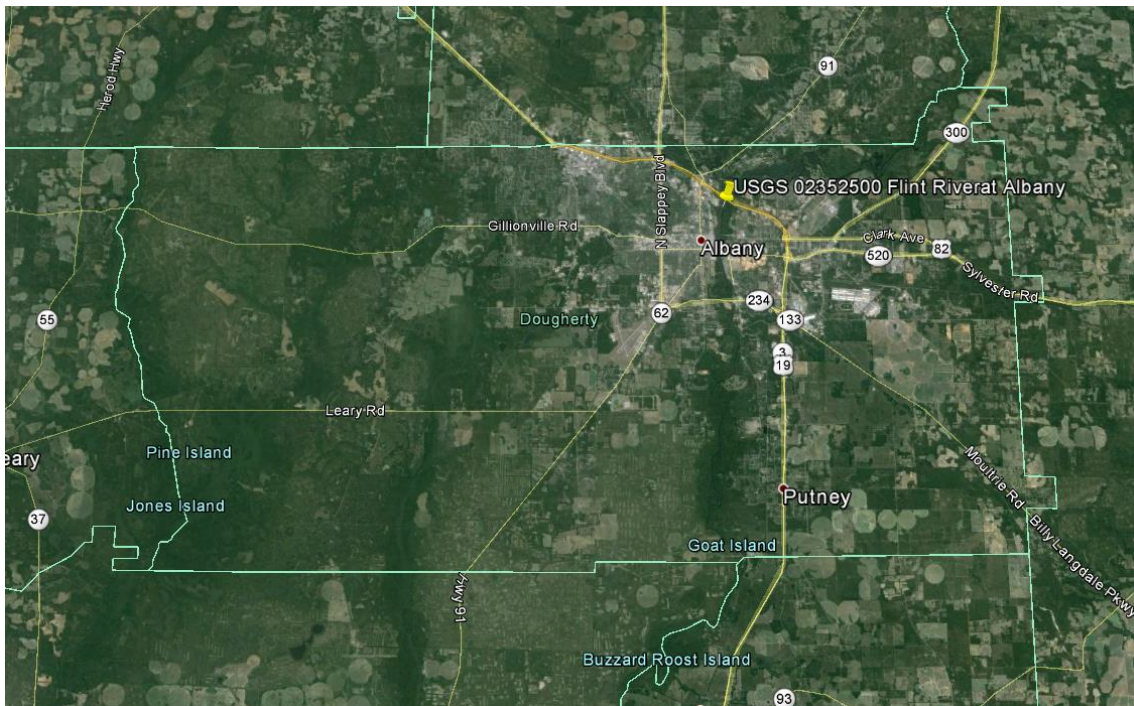
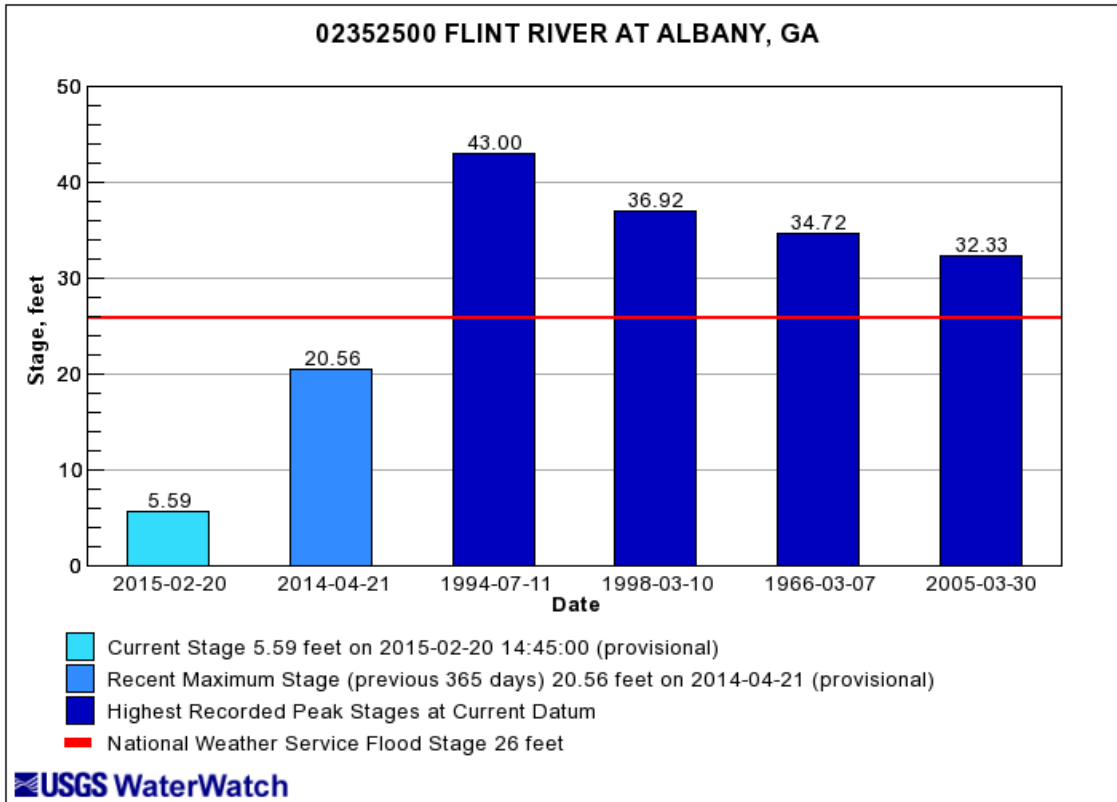
| Jurisdiction     | Date Currency | Participating in FIRM |
|------------------|---------------|-----------------------|
| City of Albany   | 9/25/09       | YES                   |
| Dougherty County | 9/25/09       | YES                   |

The Flint River Flood Stage for Albany/Dougherty County is 26 feet. The following chart shows some of the more recent as well as some of the more

major flood levels measured on the USGS river gauge (02352500) on the Flint River at Albany.

### Flood Tracking Chart Builder

Site number: 02352500 Value type: Gage Height Size: Normal (700x500) GO



| Year | Date          | Gage Height |
|------|---------------|-------------|
| 1994 | Jul. 11, 1994 | 43          |
| 1925 | Jan. 21, 1925 | 37.803      |
| 1998 | Mar. 10, 1998 | 36.92       |
| 1966 | Mar. 07, 1966 | 34.72       |
| 1929 | Mar. 20, 1929 | 34.403      |
| 1897 | Mar. 25, 1897 | 32.403      |
| 2005 | Mar. 30, 2005 | 32.33       |
| 2009 | Apr. 04, 2009 | 31.66       |
| 1943 | Jan. 22, 1943 | 31.6        |
| 1949 | Dec. 04, 1948 | 31.5        |
| 1944 | Mar. 26, 1944 | 31.2        |
| 1964 | Apr. 14, 1964 | 31.12       |
| 1971 | Mar. 09, 1971 | 31.01       |
| 1990 | Mar. 23, 1990 | 30.92       |
| 1960 | Apr. 07, 1960 | 30.8        |
| 1970 | Apr. 02, 1970 | 30.69       |
| 1975 | Mar. 21, 1975 | 30.32       |
| 1913 | Mar. 21, 1913 | 30.303      |
| 1912 | Apr. 24, 1912 | 30.103      |
| 1900 | Feb. 18, 1900 | 29.803      |
| 1928 | Apr. 24, 1928 | 29.403      |
| 1936 | Apr. 15, 1936 | 29          |
| 1961 | Mar. 03, 1961 | 29          |
| 1908 | 3-May-08      | 28.003      |
| 1919 | Mar. 03, 1919 | 27.803      |
| 1948 | Apr. 02, 1948 | 27.5        |
| 1916 | Jul. 15, 1916 | 27.403      |
| 1978 | Jan. 29, 1978 | 27.18       |
| 1922 | Mar. 16, 1922 | 26.803      |
| 1942 | Mar. 27, 1942 | 26.7        |
| 2010 | Dec. 17, 2009 | 26.63       |
| 1953 | 8-May-53      | 26.3        |
| 1920 | Apr. 05, 1920 | 26.203      |
| 1979 | Feb. 26, 1979 | 26.13       |
| 1901 | Sep. 22, 1901 | 26.003      |

*Source: USGS*

Input of available data suggests a 27.35% probability of a flood level event in any given year (Appendix A – Hazard Frequencies Table, Page 28). This data cannot be broken down by jurisdiction because all the data is from the river gauge which is located in Albany along the Flint River.

### C. Community Exposure

The Dougherty County Pre-Disaster Mitigation Plan identifies critical facilities located in the County that are susceptible to individual hazards. A critical facility is defined as a facility in either the public or private sector that provides essential products and services to the general public, is otherwise necessary to preserve the welfare and quality of life in the County, or fulfills important public safety, emergency response, or disaster recovery functions.

The critical facilities identified in Dougherty County are schools, governmental facilities, fire and emergency medical facilities, water and wastewater treatment facilities and solid waste sites. According to the critical facilities inventory report and Worksheet #3A, the most damage in terms of dollars would be in the residential sector. There is a potential of \$172.7 million in damage to structures in Albany and \$60.9 million in Dougherty County. There is a potential for \$86.2 million in damage to critical facilities in Albany and \$4.6 million in Dougherty County. The data for worksheet 3A was from the tax digest and has been broken down by jurisdiction. For more specifics on this data please see in Appendix D - for Worksheet #3A Inventory of Assets – Flood. The Critical Facilities data is in Appendix A (Critical Facilities Inventory– Flood, Page 17)

Accurate data does not exist to allow probability of flooding to be determined with regards to any particular jurisdiction. Logic would state that due to the proximity of Albany to the Flint River that it would have a higher probability but that probability is not quantifiable. At the same time, unincorporated Dougherty county has vast areas of floodplain with very few habitable dwellings located in them.

The Dougherty County Pre-Disaster Mitigation Plan used GIS, FIRM maps, related websites, and other modeling tools to map the county's critical facilities and determine which are most likely to be affected by flood.

- The analysis revealed that the portion of the County that is most likely to experience damage from flooding are the areas that are located in the 100-year Floodplain according to the FIRM map. A one hundred year flood plain delineation has been identified in both Dougherty County and the City of Albany by the National Flood Insurance Program. The Federal Emergency Management Agency (FEMA) has mapped the following Flood Prone Areas in Dougherty County and the City of Albany: Flint River, Kinchafoonee Creek, Kiokee Creek, Muckalee Creek and Lake Chehaw. The City of Albany has 42 repetitive loss properties and Dougherty County has 41 and they are all residential structures.

#### **D. Estimate of Potential Loss**

All flooding would be preceded by ample warning time. It requires a severe weather event and substantial rain to produce a flood condition, allowing time for Dougherty County to prepare for the event. Again, estimating loss is a guess depending on the severity of the flooding. Planning and Community Development's methodology to estimate potential losses utilizes the GEMA provided Excel worksheet with embedded loss estimate formula, resulting in an inventory of potential flooding losses in Appendix D, Worksheet #3a. The total value of potential damage to properties with a structure in the 100 year floodplain of both the city and county totals \$233.7 million based on tax assessor valuations. Appendix A provides Albany/Dougherty County critical facilities, with potential loss estimates of \$86.2million for the City of Albany and \$4.6 million for Dougherty County.

There have been 83 properties, all residential, identified as repetitive loss in Albany and Dougherty County.

There are no new or planned structures/buildings/infrastructure that would be considered critical or non-critical facilities planned for the flood hazard area in Albany or Dougherty County.

#### **E. Land Use and Development Trends**

Land Use is an important tool that provides local government the opportunity to inventory existing land use patterns and trends; to determine future patterns of growth, based on community needs and desires; and to develop goals, policies and strategies for land use that strike a balance

between effective and efficient delivery of public services, protection/preservation of vulnerable natural and historic resources, and respect for individual property rights. The planning process in any community involves making decisions between alternatives in various phases of the community's development. As an essential component of the Land Use Plan, it is necessary to formulate general objectives and recommendations that embody the community's goals, as well as sound planning principles and concepts.

Albany and Dougherty County Land Use and Development Ordinances do not prohibit building in flood prone areas, but require adherence to applicable codes.

Development does still occur in the floodplain, despite being discouraged,, particularly near the major rivers, however the development is required to meet the applicable local building codes for building in the floodplain. This generally requires that the structure and its utilities be elevated above the base flood elevation. Any enclosed areas below the base flood elevation are required to be wet proofed with flood vents. In Albany, structures must be raised one foot above the base flood elevation. In the county, structures must be raised three feet above the base flood elevation.

Albany and Dougherty County adopted a joint Flood Hazard Mitigation Plan in 2009. This plan is monitored, evaluated and updated annually by the Flood Hazard Mitigation Plan Steering Committee. Progress toward meeting the plan's mitigation actions is reviewed and reported to FEMA and the Georgia Department of Natural Resources. Floodplain management ordinances to implement this plan and minimize losses due to flooding conditions were also adopted by the city and county in 2009.

#### **F. Multi-Jurisdictional Differences**

The Dougherty County plan includes the City of Albany. This multi-jurisdictional plan required review of the county and each city individually for each hazard to determine if there were special concerns or mitigation measures required. Maps of each jurisdiction as related to floods are in Appendix A - Albany/Dougherty County Flood Critical Facilities Map Images – Flood (Page 24-25).

The City of Albany and unincorporated Dougherty County all contain floodplain areas. This means that both jurisdictions have to respond to this hazard and are treated the same in this plan. There have been no changes since the last plan was update was complete that would affect the overall vulnerability of the community to flooding other than an update to the Flood hazard Mitigation Plan in 2014. All jurisdictions are part of the National Flood Insurance Program. Maps of each jurisdiction as related to flood are in Appendix A Flood/Dougherty County Critical Facilities Map Images – Flood (Page 27-28).



## CHAPTER 3 – NATURAL HAZARD MITIGATION GOALS AND OBJECTIVES

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### Summary of changes:

- The status of Goals/Objectives/Action Steps from the previous plan is located in Appendix D.
- New objectives include: develop watering scheduling and water conservation education for both farmers and the general public.

There were no changes in the community's overall priorities related to mitigation since the previous plan was completed.

### I. NATURAL HAZARD – SEVERE WEATHER (THUNDERSTORM WINDS)

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**A. Mitigation Goals** – Thunderstorm winds are by far the most common natural hazard in the community, and have made their presence known in all four quadrants. Although these winds do not reach the speed of tornadoes, there are many similarities in the damage caused by the two storms. Consequently, virtually all goals, objectives, tasks and action steps are interchangeable.

### **B. Range of Mitigation Option**

1. Structural v Non-structural – Structural improvements needed for thunderstorm winds are the responsibility of the owner. The community will utilize non-structural options; enforcing and expanding building code compliance, expanding public broadcast of weather warnings, and public education to supplement property owner's structural options.
2. Existing Policies, Regulations, Ordinances and Land Use – The Pre-Disaster Planning Team reviewed the Dougherty County Capabilities Assessment and the Dougherty County Emergency Operations Plan, both of which can be found in Appendix C, to help identify and analyze the mitigation measures necessary for this hazard. The Dougherty County Comprehensive Plan was also reviewed, but not used due to

the information being outdated. The Comprehensive Plan is due to be updated in 2015-2016 and will be reviewed and will include the work completed for the pre-disaster mitigation plan. All of the plans are comprised of the unincorporated areas of Dougherty County and the City of Albany.

3. Community Values, Historic and Special Considerations - Project implementation will serve to protect historic districts in Albany and historic resources dispersed throughout the unincorporated county. No other special considerations were identified.
4. Data on new buildings and infrastructure have been covered in the goals and objectives. Any new buildings and infrastructure will be built with thunderstorm mitigation incorporated in the design. The mitigative actions for thunderstorms include public education and early warning
5. Data on existing buildings and infrastructure is shown in each hazard's critical facility inventory in Appendix A. Any existing buildings and infrastructure will be improved with thunderstorm mitigation incorporated into any renovations. The mitigative actions for thunderstorms include obtaining emergency generators, improved building codes, public awareness, and strengthening critical facilities.

### **C. Mitigation Strategy and Recommendations**

Goal #1 Educate the citizenry about the effects of severe weather.

Objective Increase enrollment in early warning system.

Task 1 Promote the early warning system to Albany/Dougherty County residents

Action Step 1.1

Heighten public awareness on actions they can take to prepare for severe weather events

Category: Education/Prevention  
Responsible Org: Fire Dept/EMA  
Coordinating Org: EMA  
Timeline: 2015-2019  
Approximate Cost: \$10,000 annually  
Funding Source: City of Albany  
Benefit: prepare and prevent deaths/injuries/property damage.

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

#### Action Step 1.2

Utilize the media for the distribution and publication of severe weather information.

Category: Education  
Responsible Org: Fire Dept/EMA  
Coordinating Org: Fire Dept/EMA  
Timeline: 2015-2019  
Approximate Cost: N/A  
Funding Source: N/A  
Benefit: prepare and prevent deaths/injuries/property damage.

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

#### Action Step 1.3

Update the Albany/Dougherty website to provide severe weather related information that is readily accessible.

Category: Education

Responsible Org: Fire Dept/EMA  
Coordinating Org: Fire Dept/EMA  
Timeline: 2015-2019 as needed  
Approximate Cost: N/A  
Funding Source: N/A  
Benefit: prepare and prevent  
 deaths/injuries/property damage.

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

#### Action Step 1.4

Educate homeowners and business owners how to prepare the property for severe weather events.

Category: Education  
Responsible Org: Fire Dept/EMA  
Coordinating Org: Fire Dept/EMA  
Timeline: 2015-2019 as needed  
Approximate Cost: N/A  
Funding Source: N/A  
Benefit: prepare and prevent  
 deaths/injuries/property damage.

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

#### Action Step 1.5

Continue enforcing the building codes and require contractors to build to a minimum wind speed. This will cover new construction and any new renovations/additions that require a building permit.

Category: Education

|                          |   |
|--------------------------|---|
| <u>Responsible Org:</u>  | Fire Dept/EMA   |
| <u>Coordinating Org:</u> | Fire Dept/EMA   |
| <u>Timeline:</u>         | 2015-2019 as needed                                     |
| <u>Approximate Cost:</u> | N/A   |
| <u>Funding Source:</u>   | N/A   |
| <u>Benefit:</u>          | prepare and prevent<br>deaths/injuries/property damage. |

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

- D. Multi-Jurisdictional Mitigation Strategy** Severe weather is a county wide problem. This Plan is a collaborative effort between the City of Albany and Dougherty County. Together each experiences the effects of severe weather conditions, and together each is working to mitigate future natural hazards by utilizing public education, early warning, and structural requirements. The action steps to be implemented for severe weather are implemented in both the City of Albany and Dougherty County.
- E. Local Public Information and Awareness Strategy** Outreach projects are effective first steps in orienting property owners to property protection issues and helping them seek out more information to protect themselves and their properties. A successful County information and education program involves both the public and private sectors. Public information and education activities advise and educate citizens, property owners, renters, businesses, and local officials about hazards and ways to protect people and property from severe weather hazards. Public information activities are among the least expensive mitigation measures, and at the same time are often the most effective thing a community can do to save lives and property. All hazard mitigation activities (preventive, structural, property protection, emergency services, and natural resource protection) begin with public information and education.

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## II. NATURAL HAZARD - DROUGHT

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**A. Mitigation Goals** – The vitality of the local economy fluctuates with conditions in agriculture, and conditions in agriculture are driven by the timely and adequate availability of water. A shortage of this essential commodity at a critical time has a severely negative impact on the economy. Previous activities have been essentially concerned with water conservation. The current effort is primarily concerned with supplementing the availability of water, and identifying what can be done to reduce the adverse impact on the economy in the event a drought does occur.

### **B. Range of Mitigation Options**

1. Structural v Non-structural –
  - Monitoring drought conditions and requiring watering schedules while encouraging deeper wells to mitigate effects of drought
2. Existing Policies, Regulations, Ordinances and Land Use – The Pre-Disaster Planning Team reviewed the Dougherty County Capabilities Assessment and the Dougherty County Emergency Operations Plan, both of which can be found in Appendix C, to help identify and analyze the mitigation measures necessary for this hazard. The Dougherty County Comprehensive Plan was also reviewed, but not used due to the information being outdated. The Comprehensive Plan is due to be updated in 2016-2017 and will be reviewed and will include the work completed for the pre-disaster mitigation plan. All of the plans are comprised of the unincorporated areas of Dougherty County and the City of Albany.
3. Community values, historic and special considerations - The Pre-Disaster Planning Team has reviewed this hazard and concluded that there are no special considerations. Data on new and existing critical facilities have been covered in the goals and objectives.
4. Data on new buildings and infrastructure have been covered in the goals and objectives. Any new buildings and infrastructure will be built with drought mitigation incorporated in the design. The mitigative actions for drought include water conservation, deepening wells and public awareness.

5. Since there no known building codes projected to assist in mitigating for drought, the stewardship of environment would be responsibility of homeowner. Remodeling of existing structures shall conform to any regulations regarding drought.

### C. Mitigation Strategy and Recommendations

Goal #1 Mitigate the effects of drought on Dougherty County, particularly in the agricultural industry

Objective Develop conservation efforts to lessen the impact of drought conditions in Dougherty County and Albany

Task 1 Require water conservation during drought

#### Action Step 1.1

**\*NEW\***

Encourage farmers to conserve water through irrigation scheduling

Category: Local Planning & Regulations

Responsible Org: Dougherty Co. Board of Commissioners

Coordinating Org: USDA/NRCS

Timeline: Annual 2015-2020

Cost: Staff Time

Funding Source: Grants

Benefit: Mitigate against drought damage

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

## Action Step 1.2

**\*NEW\***

Develop a watering schedule to restrict the use of public water resources for non-essential usage, such as landscaping, washing cars, filling swimming pools, etc.

|                          |                                 |
|--------------------------|---------------------------------|
| <u>Category:</u>         | Local Planning & Regulations    |
| <u>Responsible Org:</u>  | City of Albany                  |
| <u>Coordinating Org:</u> | Albany City Council             |
| <u>Timeline:</u>         | Annual 2015-2020                |
| <u>Cost:</u>             | Staff Time                      |
| <u>Funding Source:</u>   | Departmental Operating Budget   |
| <u>Benefit:</u>          | Mitigate against drought damage |

This action step benefit will be citywide with an estimated population of 77,434. The value of structures benefiting is \$2.6 billion.

## Action Step 1.3

**\*NEW\***

Provide “print-ready” articles on drought awareness to local media for distribution.

|                          |                                 |
|--------------------------|---------------------------------|
| <u>Category:</u>         | Education & Awareness           |
| <u>Responsible Org:</u>  | Dougherty Co. EMA               |
| <u>Coordinating Org:</u> | Dougherty Co. EMA               |
| <u>Timeline:</u>         | Annual 2015-2020                |
| <u>Cost:</u>             | Staff Time                      |
| <u>Funding Source:</u>   | Departmental Operating Budget   |
| <u>Benefit:</u>          | Mitigate against drought damage |

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

- D. Multi-Jurisdictional Mitigation Strategy** Drought is a county wide problem. This Plan is a collaborative effort between the City of Albany and Dougherty



County. Together each experiences the effects of drought conditions, and together each is working to mitigate future natural hazards by utilizing public education, early warning, and structural requirements. The action steps to be implemented for drought are implemented separately in Dougherty County and the City of Albany because drought effects different aspects of life in each jurisdiction. For Dougherty County, informing and education the farmers is key whereas, in Albany, restricting unnecessary water usage of residents is key to reducing the effects of drought on the community as a whole.

- E. Local Public Information and Awareness Strategy** Outreach projects are effective first steps in orienting property owners to property protection issues and helping them seek out more information to protect themselves and their properties. A successful County information and education program involves both the public and private sectors. Public information and education activities advise and educate citizens, property owners, renters, businesses, and local officials about hazards and ways to protect people and property from severe weather hazards. Public information activities are among the least expensive mitigation measures, and at the same time are often the most effective thing a community can do to save lives and property. All hazard mitigation activities (preventive, structural, property protection, emergency services, and natural resource protection) begin with public information and education.

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### III. NATURAL HAZARD - TORNADO

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**A. Mitigation Goals** - A tornado inflicts greater loss on the community than any other natural hazard. This is also the only hazard for which a loss of life or injury was documented. The general public fails to appreciate how little time there is to respond to a sudden tornado strike, and how important it is that all parties be prepared at all times to respond correctly. Although thunderstorm winds do not reach the speed of tornadoes, there are many similarities in the damage caused by the two type hazards. Consequently, virtually all goals, objectives, tasks and action steps of the two hazards are interchangeable.

**B. Range of Mitigation Options**

1. Structural v Non-structural – Identified goals address both options. Residents and developers undertaking new construction or renovation will be encouraged to consider making safe room additions to the structure, at owner expense. Other, non-structural options promote education and early warning.
2. Existing Policies, Regulations, Ordinances and Land Use – The Pre-Disaster Planning Team reviewed the Dougherty County Capabilities Assessment and the Dougherty County Emergency Operations Plan, both of which can be found in Appendix C, to help identify and analyze the mitigation measures necessary for this hazard. The Dougherty County Comprehensive Plan was also reviewed, but not used due to the information being outdated. The Comprehensive Plan is due to be updated in 2015-2016 and will be reviewed and will include the work completed for the pre-disaster mitigation plan. All of the plans are comprised of the unincorporated areas of Dougherty County and the City of Albany.
3. Community Values, Historic and Special Considerations – The Pre-Disaster Planning Team has reviewed this hazard and concluded that there are no special considerations. Data on new and existing critical facilities have been covered in the goals and objectives.
4. Data on new buildings and infrastructure have been covered in the goals and objectives. Any new buildings and infrastructure will be built with tornado mitigation incorporated in the design. The

mitigative actions for tornadoes include improved building codes, public awareness, warning systems, and strengthening critical facilities.

5. Data on existing buildings and infrastructure is shown in each hazard's critical facility inventory in Appendix A. Any existing buildings and infrastructure will be improved with tornado mitigation incorporated into any renovations. The mitigative actions for tornadoes include improved building codes, public awareness, warning systems, and strengthening critical facilities.

### C. Mitigation Strategy and Recommendations

Goal #1 Reduce risks and vulnerability of people in Tornado hazard-prone areas.

Objective To advise the public about tornado safety precautions.

Task 1 Guard the public against injury and loss of life from Tornado hazards.

#### Action Step 1.1

Education program on personal emergency preparedness, i.e., emergency survival kits.

Category: Emergency Services  
Responsible Org: Albany Fire Dept/EMA  
Coordinating Org: Albany/Dougherty EMA  
Timeline: When funds are available 2015-2020  
Cost: N/A  
Funding Source: General Fund  
Benefit: Prepare and prevent deaths/injuries/property damage.

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

## Action Step 1.2

Partner with local radio stations to assure that appropriate warning is provided to County residents of impending Tornado.

|                          |  |
|--------------------------|--|
| <u>Category:</u>         | Emergency Services                                   |
| <u>Responsible Org:</u>  | Albany Fire Dept/EMA                                 |
| <u>Coordinating Org:</u> | Albany/Dougherty EMA                                 |
| <u>Timeline:</u>         | When funds are available 2015-2020                   |
| <u>Cost:</u>             | N/A  |
| <u>Funding Source:</u>   | General Fund   |
| <u>Benefit:</u>          | Prepare and prevent deaths/injuries/property damage. |

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

## Action Step 1.3

Encourage the American Red Cross to teach the Citizen's Disaster Course on a frequent basis.

|                          |  |
|--------------------------|--|
| <u>Category:</u>         | Emergency Services                                   |
| <u>Responsible Org:</u>  | Albany Fire Dept/EMA                                 |
| <u>Coordinating Org:</u> | Albany/Dougherty EMA                                 |
| <u>Timeline:</u>         | When funds are available 2015-2020                   |
| <u>Cost:</u>             | N/A  |
| <u>Funding Source:</u>   | General Fund   |
| <u>Benefit:</u>          | Prepare and prevent deaths/injuries/property damage. |

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

Goal #2      Reduce the potential impact of Tornado disaster on new and existing properties and infrastructure and the local economy.

Objective      Make property more resistant to Tornado hazards.

Task 1      Implement cost-effective activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to Tornado hazards.

#### Action Step 2.1

Encourage a self-inspection program at critical facilities to assure that the building infrastructure is Tornado resistant.

Category:                      Property Protection  
Responsible Org:          Albany Fire Dept/EMA  
Coordinating Org:        Albany/Dougherty EMA  
Timeline:                      When funds are available 2015-2020  
Cost:                              Staff time  
Funding Source:          General Fund  
Benefit:                        Prevent deaths/injuries/property damage.

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

#### Action Step 2.2

Encourage businesses to develop emergency plans.

Category:                      Property Protection  
Responsible Org:          LEPC/EMA  
Coordinating Org:        Fire Dept/EMA  
Timeline:                      Daily 2015-2020

Cost: Staff time  
Funding Source: Departmental Operating Budget  
Benefit: Prevent deaths/injuries/property damage.

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

Action Step 2.3

Encourage public and private identification of safe rooms.

Category: Personal Protection  
Responsible Org: Fire Dept/EMA  
Coordinating Org: Fire Dept/EMA  
Timeline: 2015-2019  
Approximate Cost: Staff time  
Funding Source: Departmental Operating Budget  
Benefit: Improved public safety during emergencies

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

Goal #3 Improve warning to the public during natural and man-made hazards

Objective Improved community warning system

Task 1 increase the effectiveness of the mass alert system

Action Step 3.1

Renew subscription for Mass Alert / high-speed telephone community notification warning and communication system.

|                          |   |
|--------------------------|---|
| <u>Category:</u>         | Public Awareness                                    |
| <u>Responsible Org:</u>  | Dougherty County EMA/911                            |
| <u>Coordinating Org:</u> | Dougherty County EMA/911                            |
| <u>Timeline:</u>         | Annual 2015-2020                                    |
| <u>Approximate Cost:</u> | \$30,000  |
| <u>Funding Source:</u>   | Departmental Operating Budget                       |
| <u>Benefit:</u>          | Improved public safety/awareness during emergencies |

This action step benefit will be countywide with an estimated population of 171,999. The value of structures benefiting is \$713 million.

- D. Multi-Jurisdictional Mitigation Strategy:** each action step will be implemented countywide.
- E. Local Public Information and Awareness Strategy:** provide education and training activities directed toward the citizens of Dougherty County and its municipalities.

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#### IV. NATURAL HAZARD - FLOOD

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**A. Mitigation Goals** – Dougherty County has suffered repetitive flood damage in a number of major flood incidents; 1994, 1998 and 2009 events resulted in tens of millions of dollars in property damage and the County remains prone to future Flooding hazard. This Plan’s mitigation goals are avoidance and protection. Through an informed public and the enforcement of floodplain management, we will reduce the community’s risk to people, property/environment and the economy from future flooding.

**B. Range of Mitigation Options**

1. Structural and non-structural mitigation – The Albany Dougherty Pre-Disaster Mitigation Committee has identified structural and non-structural mitigation measures to ensure that the community adequately addresses all relevant flood issues. Reducing the level of vulnerability (mitigation) requires our elected officials, City/County administrators, and the public to be fully integrated into the flood management process in order to coordinate efforts during stages of flood preparation. This may require modification or adoption of local ordinances/codes to provide guidance and regulations to manage flood mitigation at the County level. Dougherty County must coordinate with region and state officials and other municipalities who share our common hazard flooding. Albany and Dougherty County officials shall enforce both local regulations/restrictions and state emergency orders. Although not an official policy, Albany/Dougherty County has a “Best Management Practice” regarding severe weather events of lowering the levels of stormwater ponds and clearing stormwater drains of debris so as to mitigate as much as possible the effects of severe weather. This best management practice is utilized for mitigating the effects of flooding because severe weather and flooding go hand in hand. Both Albany and Dougherty have prepared floodplain ordinances and together they have created a Flood Mitigation Plan. Enforcing the floodplain ordinances in Dougherty County and Albany is



paramount for continuing participation in the National Flood insurance Program (NFIP)

2. Existing Policies, Regulations, Ordinances and Land Use – The Pre-Disaster Planning Team reviewed the Dougherty County Capabilities Assessment and the Dougherty County Emergency Operations Plan, both of which can be found in Appendix C, to help identify and analyze the mitigation measures necessary for this hazard. The Dougherty County Comprehensive Plan was also reviewed, but not used due to the information being outdated. The Comprehensive Plan is due to be updated in 2015-2016 and will be reviewed and will include the work completed for the pre-disaster mitigation plan. All of the plans are comprised of the unincorporated areas of Dougherty County and the City of Albany.
3. Community values, historic and special considerations - The Pre-Disaster Planning Team has reviewed this hazard and concluded that there are no special considerations. Data on new and existing critical facilities have been covered in the goals and objectives.
4. Data on new buildings and infrastructure have been covered in the goals and objectives. Any new buildings and infrastructure will be built with flood mitigation incorporated in the design. The mitigative actions are for the removal of development in floodplain areas.
5. Data on existing buildings and infrastructure is shown in each hazard’s critical facility inventory in Appendix A. Any existing buildings and infrastructure will be improved with flood mitigation incorporated into any renovations. The mitigative actions are for the removal of development in floodplain areas.

### **C. Mitigation Strategy and Recommendations**

Goal #1 Educate the citizenry about Flood hazards.

Objective Improve Flood hazard information dissemination.

Task 1 Improve information dissemination using Albany Dougherty website, access channel and regular updates during emergencies.

#### Action Step 1.1

Increase the level of citizen education on flood issues in Albany and Dougherty County.

Category: Education  
Responsible Org: Planning & Development Services/Fire Dept/EMA  
Coordinating Org: Planning & Development Services/Fire Dept/EMA  
Timeline: 2015-2019  
Cost: N/A  
Funding Source: N/A  
Benefit: Mitigate against future flood damage

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

#### Action Step 1.2

Update the Albany Dougherty website to provide flood hazard related information that is readily accessible.

Category: Education  
Responsible Org: Planning & Development Services  
Coordinating Org: EMA  
Timeline: Daily 2015-2020  
Cost: Staff time  
Funding Source: Staff time  
Benefit: Educate/Mitigate against future flood damage

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

### Action Step 1.3

Outreach to residents and property owners in Repetitive Loss Areas and Flood Hazard Zones through annual mailing of informational brochures and letters.

|                          |                                      |
|--------------------------|--------------------------------------|
| <u>Category:</u>         | Education/Prevention                 |
| <u>Responsible Org:</u>  | Planning & Development Services      |
| <u>Coordinating Org:</u> | Planning & Development Services      |
| <u>Timeline:</u>         | 2015-2019                            |
| <u>Cost:</u>             | N/A                                  |
| <u>Funding Source:</u>   | N/A                                  |
| <u>Benefit:</u>          | Mitigate against future flood damage |

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

## Objective 2

### Enforce floodplain management

Task 1 Continue to enforce floodplain management regulations.

#### Action Step 2.1

Continue diligent enforcement of building codes and floodplain management regulations to maximize property protection and safety of residents and to

maintain the good standing of the city and county with the National Flood Insurance Program.

Category: Education/Prevention  
Responsible Org: Planning & Development Services  
Coordinating Org: Planning & Development Services  
Timeline: Daily 2015-2020  
Cost: N/A  
Funding Source: N/A  
Benefit: Mitigate against future flood damage

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

Goal #2 Reduce exposure to Flood hazards.

Objective 1 Develop Flood mitigation plans.

Task 1 Continue to work with the Army Corps of Engineers and other agencies to develop Flood mitigation plans to protect property in the County.

Action Step 3.1

Continue to protect from additional development properties that are vulnerable to flood damage; Flint River Corridor properties and other wetlands are priorities.

Category: Education/Prevention  
Responsible Org: Planning & Development Services  
Coordinating Org: Planning & Development Services  
Timeline: Daily 2015-2020

|                        |                                      |
|------------------------|--------------------------------------|
| <u>Cost:</u>           | N/A                                  |
| <u>Funding Source:</u> | General Funds                        |
| <u>Benefit:</u>        | Mitigate against future flood damage |

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

### Action Step 3.2

Maintain the three-foot freeboard requirement in effect for Dougherty County since 1999. (Freeboard is the elevation of the finished floor above the level of the 100-year flood required for new construction). Propose that the City of Albany amend its Floodplain Management Ordinance to adopt this standard.

|                          |                                      |
|--------------------------|--------------------------------------|
| <u>Category:</u>         | Structural/Prevention                |
| <u>Responsible Org:</u>  | Planning & Development Services      |
| <u>Coordinating Org:</u> | Planning & Development Services      |
| <u>Timeline:</u>         | Daily 2015-2020                      |
| <u>Cost:</u>             | N/A                                  |
| <u>Funding Source:</u>   | General Funds                        |
| <u>Benefit:</u>          | Mitigate against future flood damage |

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

Objective 2      Improve the stormwater drainage system.

Task 1            Improve the stormwater drainage system in Albany and Dougherty County.

## Action Step 4.1

In preparation for the next SPLOST referendum and other funding opportunities, identify needed storm water management projects to be included in infrastructure work in city and county. Include an analysis of the need for additional back-up power generation for the Joshua Street Wastewater Treatment System.

|                          |                                      |
|--------------------------|--------------------------------------|
| <u>Category:</u>         | Education/Prevention                 |
| <u>Responsible Org:</u>  | Public works/Engineering             |
| <u>Coordinating Org:</u> | Public works/Engineering             |
| <u>Timeline:</u>         | 2015-2019                            |
| <u>Cost:</u>             | N/A                                  |
| <u>Funding Source:</u>   | General Funds, SPLOST                |
| <u>Benefit:</u>          | Mitigate against future flood damage |

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

## Action Step 4.2

Maintain retention ponds as necessary throughout Dougherty County to assist in Flood control.

|                          |   |
|--------------------------|---|
| <u>Category:</u>         | Structural/Prevention   |
| <u>Responsible Org:</u>  | Albany/Dougherty Public Works, Planning & Development Services, Engineering |
| <u>Coordinating Org:</u> | Albany/Dougherty Public Works, Planning & Development Services, Engineering |
| <u>Timeline:</u>         | Daily 2015-2020   |
| <u>Cost:</u>             | N/A   |
| <u>Funding Source:</u>   | General Funds   |

Benefit: Mitigate against future flood damage

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

#### Action Step 4.3

Upgrade existing pump stations capabilities to meet historically flood prone areas.

Category: Structural/Prevention  
Responsible Org: Albany/Dougherty Public Works,  
Coordinating Org: Albany/Dougherty Public Works,  
Timeline: Daily 2015-2020  
Cost: \$35k-50k  
Funding Source: SPLOST, General Funds  
Benefit: Mitigate against future flood damage

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

#### Action Step 4.4

Continue to upgrade pump stations with an emphasis on flood control.

Category: Structural/Prevention  
Responsible Org: Albany/Dougherty Public Works,  
Coordinating Org: Albany/Dougherty Public Works,  
Timeline: Daily 2015-2020  
Cost: \$35k-50k  
Funding Source: SPLOST, General Funds  
Benefit: Mitigate against future flood damage

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

Action Step 4.5

Drain ponds and remove debris from drainage systems prior to severe weather to mitigate effects.

Category: Structural/Prevention  
Responsible Org: Albany/Dougherty Public Works,  
Coordinating Org: Albany/Dougherty Public Works,  
Timeline: Daily 2015-2020  
Cost: staff time  
Funding Source: General Funds  
Benefit: Mitigate against future flood damage

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

Goal #3 Protect public infrastructure and critical facilities from Flooding.

Objective 1 Flood proof or relocate outside the of the flood hazard area all critical facilities.

Task 1 Identify buildings which would benefit from Flood hazard mitigation.

Action Step 5.1



Review all capital improvements plans to ensure that infrastructure improvements are not directed towards Flood hazard areas.

|                          |                                      |
|--------------------------|--------------------------------------|
| <u>Category:</u>         | Structural/Prevention                |
| <u>Responsible Org:</u>  | Planning & Development Services      |
| <u>Coordinating Org:</u> | Planning & Development Services      |
| <u>Timeline:</u>         | Daily 2015-2020                      |
| <u>Cost:</u>             | staff time                           |
| <u>Funding Source:</u>   | General Funds                        |
| <u>Benefit:</u>          | Mitigate against future flood damage |

This action step benefit will be countywide with an estimated population of 9,878. The value of structures benefiting is \$233.7 million.

- D. Special Multi-Jurisdictional Strategy:** Flooding and the associated damages have impacted both the City of Albany and Dougherty County. This Plan is a collaborative effort between the City of Albany and Dougherty County. Together each experienced the effects of Flood hazard conditions, and together each is working to mitigate future natural hazards. The action steps for flooding will be implemented by both the City of Albany and Dougherty County unless otherwise stated.
- E. Public Information and Awareness Strategy:** Outreach projects are effective first steps in orienting property owners to property protection issues and helping them seek out more information to protect themselves and their properties. A successful County information and education program involves both the public and private sectors. Public information and education activities advise and educate citizens, property owners, renters, businesses, and local officials about hazards and ways to protect people and property from Flooding. Public information activities are among the least expensive mitigation measures, and at the same time are often the most effective thing a community can do to save lives and property. All hazard mitigation activities (preventive, structural, property protection, emergency services, and natural resource protection) begin with public information and education.

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## CHAPTER 4 – MITIGATION PLAN EXECUTION

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### Summary of Changes:

- The EMA director will be responsible for implementing and recommending updates to the plan on an annual basis.

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### I. IMPLEMENTATION

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#### A. Administrative Actions

The chief elected official (mayor) and county commission chairman chief appointed officials (county administrator, city manager) of the three local jurisdictions are responsible for day-to-day administrative personnel and operations of their respective local governments, mitigation activities proposed herein, and their respective jurisdiction's responsibilities for plan implementation. It is these individuals who will present and recommend to the governing body policy changes, ordinance adoption, or initiate revisions in administrative procedures necessary to accomplish goals of this mitigation plan. These three individuals are responsible for ensuring that action steps specific to their jurisdiction are implemented, and reporting progress to the executive committee. The EMA Director is responsible for coordinating and supporting these activities, and generally overseeing plan implementation

#### B. Authority and Responsibility

The authority and responsibility for implementation of this plan is vested in the office of Emergency Management Director.

#### C. Prioritization

1. Emergency response personnel and local governmental staff updated an assessment of the community's ability to respond to any hazards that could seriously affect any of the three participating jurisdictions. These personnel have firsthand knowledge of local capabilities and see the interaction between responsible parties. Among the strongest

findings gleaned from the capabilities assessment is the lack of information and coordination between elected and appointed officials, and between emergency responders and private sector individuals/organizations with assigned emergency responsibilities. Because information is not only fundamental but essential to success in virtually every endeavor, priority in development of this plan has been placed on compiling and disseminating pertinent information, and coordinating the activities of partners in mitigation. Dougherty County Emergency Management Agency will develop a library of mitigation materials and serve as a clearinghouse of information to be presented to the general public in numerous settings and forums, applied to local government activities and shared between local emergency response agencies. This activity is a non-structural mitigation measure; consisting of action steps less expensive to implement, with broader application irrespective of the type hazard, less expensive to maintain, and more adaptable for application to specific needs than structural measures. Since this is a non-structural measure with a wealth of information available on the subject matter, the greatest expense associated with this activity is expected to be staff time. As mentioned on page 1, the county has been aggressive in recent years in preparedness activities. The balance of plan action steps either supplement or complete active mitigation measures, or are best management practices.

More specifically, priorities were established as functions of time and cost. Actions which were deemed less costly and less time consuming to implement were given higher priority, while those of greater expense and requiring more time for implementation were rated lower.

2. Use of cost benefit – Of the action steps included in this plan, 75% involve compilation and/or dissemination of disaster-related information. A major benefit of such non-structural measures is their cost effectiveness; they are inexpensive to implement and maintain and have broad applicability. The balance of activity either supplements or completes preparedness measures initiated previously by the community, or are best management practices. The

“high ticket” actions have a lower public benefit level and will take significantly longer periods of time to implement. These appear late in the list of priorities.

3. Use of other calculations – No other calculations were utilized.
4. Use of other review structure – No other review structure was utilized.

**D. Incorporation of Pre-Disaster Mitigation into other plans/planning measures**

Pursuant to Georgia law, local governments must prepare and adopt a comprehensive plan to maintain eligibility for state grants, loans and/or permits. All local jurisdictions are diligent in maintaining their “Qualified Local Government” status. Although the chief elected official of the jurisdiction is legally accountable for ensuring these plans are prepared in accordance with stringent state planning and procedural standards, and formally adopted, responsibility for ensuring this is accomplished is deferred to the chief administrative official. The previous hazard mitigation plan was reviewed during the update process of the comprehensive plan. At that time there was very little connection between the two documents, however the push is on to further incorporate hazard mitigation into comprehensive planning and during the next comprehensive plan update this will be done. Annual review and evaluation of this mitigation plan will serve to facilitate incorporation of mitigation measures into daily management functions of the local governments as well as the comprehensive plans of the three communities, all scheduled to be updated no later than October 31, 2016. The Southwest Georgia Regional Commission has helped not only with preparation of this plan but has also been helping the communities comply with comprehensive and other planning requirements. In addition, digital maps prepared for this plan exceed the pre-disaster mitigation planning requirements. Much of the mapped information included here does not appear on any local data base, but is useful for revealing the relationships between planning, management and mitigation. This resource is intended to

provide a valuable link between mitigation, planning and management functions of the local governments.

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## II. MONITORING AND EVALUATION

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### A. Method

Local monitoring and evaluation will occur annually. The EMA Director will review the plan at a local level to update administrative actions that have been taken, and revise the plan as needed. The EMA Director will maintain a current, written record of progress made with plan implementation. With the record of project information recorded during the course of the year(s) it will be useful for the end-of-year evaluation (and five-year update). Once the five year update comes it will be very useful to have the written record of accomplishments and notes ready to be discussed and inserted into the updated plan. Assuming there is no change in the planning requirements; Dougherty County will follow the same method as was done for this plan update, beginning around 2018. One of the first tasks of the EMA Director will be to determine the criteria to be used for evaluation of the plan. Included among these criteria should be:

- Do the goals and objectives continue to address expected conditions in Dougherty County?
- Is the risk assessment still appropriate, or has the nature or magnitude of the hazard and/or vulnerability changed over time?
- Are current resources appropriate for implementing this plan?
- Have lead agencies participated as originally proposed?
- Have outcomes been adequate?
- What problems have occurred in the implementation process?
- Have member of the public been adequately involved in the process? Are their comments being heard?

### B. Responsibility

The responsibility of monitoring, reviewing and updating the plan will be the Dougherty County Emergency Agency in cooperation with all county agency

and all departments in the City of Albany. The agency may involve other regional, state, and private entities to assist in updating the plan.

**C. Timeframe**

Upon formal plan adoption the EMA Director will organize and assign specific responsibilities for plan implementation. The EMA Director shall assess progress quarterly thereafter, and where necessary develop plan revisions or adjustments. The EMA Director shall perform a progress evaluation of annual progress in December. Based on the results of this evaluation appropriate steps will be taken to facilitate implementation during the subsequent year.

**D. Reporting**

Quarterly meetings between the EMA Director and the jurisdictions will be used as the reporting mechanism. Presentations by the EMA Director will keep the local governments abreast of plan progress and any shortcomings in plan implementation. This time will be used to adjust or supplement the plan in the event of significant problems or difficulties, and will help maintain responsibility and accountability among the participants. The EMA Director will make periodic reports to the board of commissioners concerning implementation progress.

The monitoring and evaluation process described in the previous plan was used. No details are available on that evaluation process as the previous EMA director responsible for that monitoring and evaluation is now retired.

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**III. MULTI-JURISDICTIONAL STRATEGY AND CONSIDERATIONS**

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The Dougherty County Emergency Management Agency (EMA) is the authorized agent of the City of Albany for Pre-Disaster Mitigation planning. These officials are responsible for the administrative personnel and day-to-day operations of their respective local governments, mitigation activities proposed in the plan, and their respective jurisdiction's responsibilities for plan implementation. It is these individuals who will present and

recommend to the governing body policy changes, ordinance adoption, or initiate revisions in administrative procedures necessary to accomplish goals of the mitigation plan. These individuals have responsibility for ensuring that action steps specific to their respective jurisdictions are implemented, and reporting progress to the executive committee.

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#### IV. PLAN UPDATE AND MAINTENANCE

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##### A. Public involvement

Many of the action steps identified in this plan require direct interaction with the general public. These occasions will be used not only to share critical information needed by the public, but to inform residents of local mitigation activities and to solicit public participation throughout the year. As an official creation of the county, meetings of the executive committee are “public”. Consequently, all such meetings will be posted in advance of the meeting date, and the local print media will receive notification directly. The 2019 update of the plan is expected to bear little resemblance to the current document. For that reason, and because it is an official plan of all three local jurisdictions, a publicly advertised hearing will be held at the beginning of the update process to inform the public and to solicit public participation. A second hearing will be held near the end of the update process for public comment.

Responsible officials of involved organizations and agencies should recommend revisions at any time and provide information periodically as to change of personnel and available resources which would bear on the provisions of this plan and its implementation.

To facilitate the goal of continued public involvement in the planning process, the EMA will assure that the following steps are taken:

- The public will be directly involved in the update and review of the plan as members of the Pre-Disaster Mitigation Planning Committee.
- Copies of the plan will be kept on hand at appropriate agencies throughout Dougherty County. Contained in the plan is the address

and phone number of the EMA employee responsible for keeping track of public comments on the plan.

- The plan will be available on the City/County's website, and will contain an e-mail address and phone number the public can use for submitting comments and concerns about the plan.
- A public meeting will be held annually to provide the public with a forum for expressing concerns, opinions, and ideas. The EMA will set meeting schedules and dates and use County resources to publicize and host this meeting.

**B. Timeframe**

It is not presently known what planning standards will apply to the 2020 plan update. Consequently, it is difficult to accurately predict the specific timetable which will be needed. The comprehensive plans of jurisdiction must be prepared, go through regional and state reviews and adopted by October 31, 2017. Based on current assumptions of future mitigation planning standards, a committee structure and plan preparation process similar to that described in the introduction is proposed. The first of two publicly advertised hearings will be held in summer of 2020 at the beginning of the update process to inform the general public and solicit public participation. A second hearing will be held in late fall near the end of the update process for public comment prior to adoption by local governing bodies.

**C. Reporting**

The quarterly meetings of the executive committee will be used as the reporting mechanism. Presentations by the various responsible parties to this committee will not only update the EMA Director, but keep the full executive committee abreast of plan progress and any shortcomings in plan implementation. This time will be used to adjust, maintain or supplement the plan in the event of significant problems, difficulties or unanticipated success. This reporting method will help maintain responsibility and accountability among the participants. The EMA Director will make periodic reports to the board of commissioners concerning implementation progress. The chief elected or chief administrative officer of all local governments



serves on the executive committee. These individuals will also report to their elected governing bodies progress made in plan implementation.

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## CHAPTER 5 – CONCLUSION

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### Summary of Changes:

- No Changes

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### I. SUMMARY

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Local government adoption of this mitigation plan completes the third of four important steps. Resources have been organized to address the issues associated with hazard mitigation. Residents have identified the natural hazards most likely to affect the community and assessed the level of risk associated with each hazard. Included in this document are the numerous steps which must yet be taken to reduce community exposure to the natural hazards most likely to occur. The fourth step remains to be completed. It is believed that implementation of the action steps identified herein will make the community much safer in the event another natural disaster should occur. The community can capitalize on past successes in emergency preparedness to continue its efforts to provide for the health, safety and general well-being of the resident population.

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### II. REFERENCES

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#### **Publications**

Numerous publications were utilized in compiling information for this plan. Each sub-committee's resources are indicated on the individual worksheets located in the appendices. Some publications used include:

1. The Albany Herald
2. The Thomasville Times Enterprise
3. Flood Insurance Rate Map (FIRM)
4. U.S. Geological Survey Water-Supply Paper

Numerous publications were utilized in compiling information for this plan. Each sub-committee's resources are indicated on the individual worksheets located in the appendices. Some websites used include:

1. GEMA

2. FEMA
3. NCDC

Web Sites -

<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~storms>

[morgan@westegg.com](mailto:morgan@westegg.com)

[www.tornadoproject.com](http://www.tornadoproject.com)

<http://www.dnr.state.ga.us/dnr/environ/>

et.al.

### **Additional sources of information**

The additional sources of information used in compiling this research were county records identifying past hazard events.

Georgia Department of Natural Resources

Georgia Forestry Commission

Georgia Tornado Database

National Climatic Data Center

National Weather Service

University of Georgia

Center for Agribusiness and Economic Development

USDA Farm Services Agency

Newspaper articles

Interviews with local sources

Dougherty County Comprehensive Plan

City of Albany Comprehensive Plan

Dougherty County Emergency Operations Plan 2011

et al.